



The BESURE study

2018 Update

Danielle German, PhD, MPH on behalf of the
BESURE team



Overview

- National HIV Behavioral Surveillance and BESURE
- Baltimore data overview
- HIV “cascade” indicators, all waves
- MSM5 data update
- Upcoming IDU5 Cycle



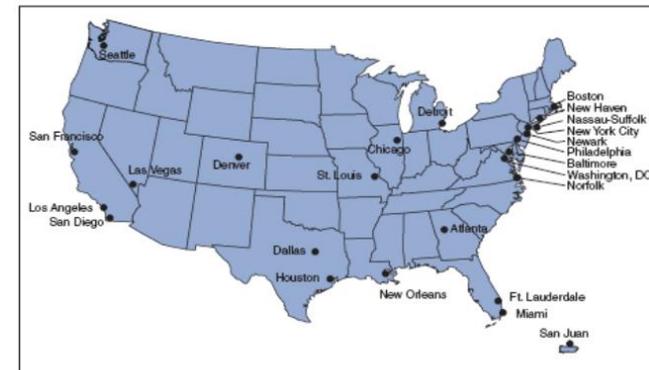
NHBS & BESURE



National HIV Behavioral Surveillance (NHBS)

- Implemented in up to 25 metropolitan areas (varied over time)
- Major divisions of metropolitan areas with greatest numbers of AIDS cases in the U.S.

FIGURE 1. Participating metropolitan statistical areas in the National Human Immunodeficiency Virus Behavioral Surveillance System — United States



MMWR — Surveillance Summaries - July 7, 2006 / 55(SS06);1-16



Baltimore HIV Behavioral Surveillance

The

BEhavioral

SUrveillance

REsearch

Study

Collaborative project of CDC, MDH, and JHSPH

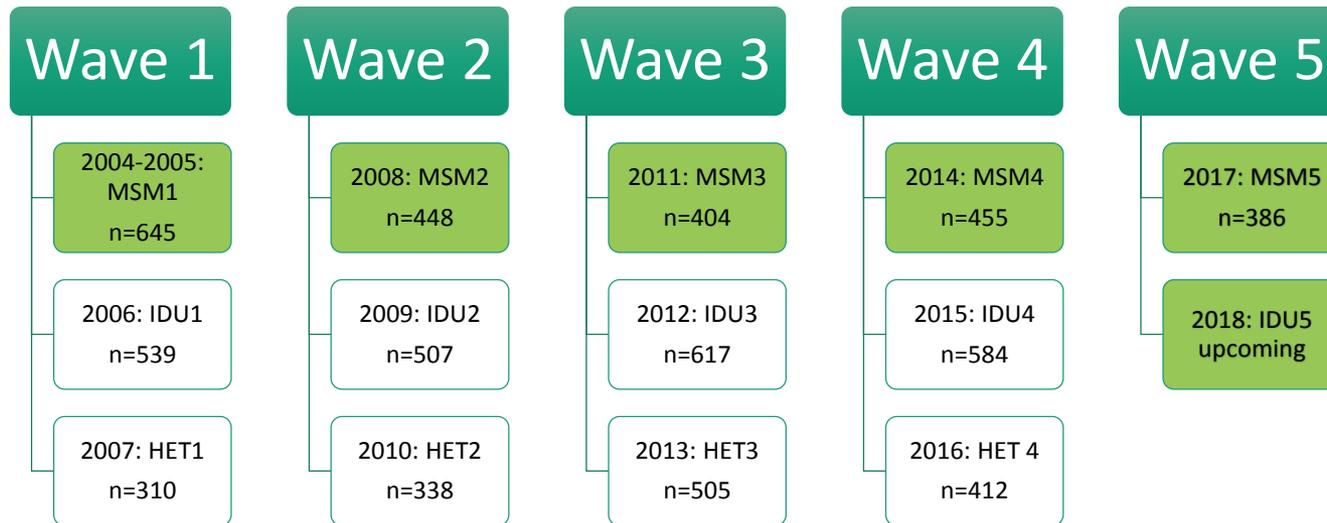


Objectives

- To assess prevalence of and trends in:
 - HIV risk behaviors
 - HIV testing behaviors
 - Exposure to and use of prevention and care services among persons at high risk for infection or transmission
 - HIV prevalence
 - ... and annual survey on social issues, health, and well-being in Baltimore



BESURE to date



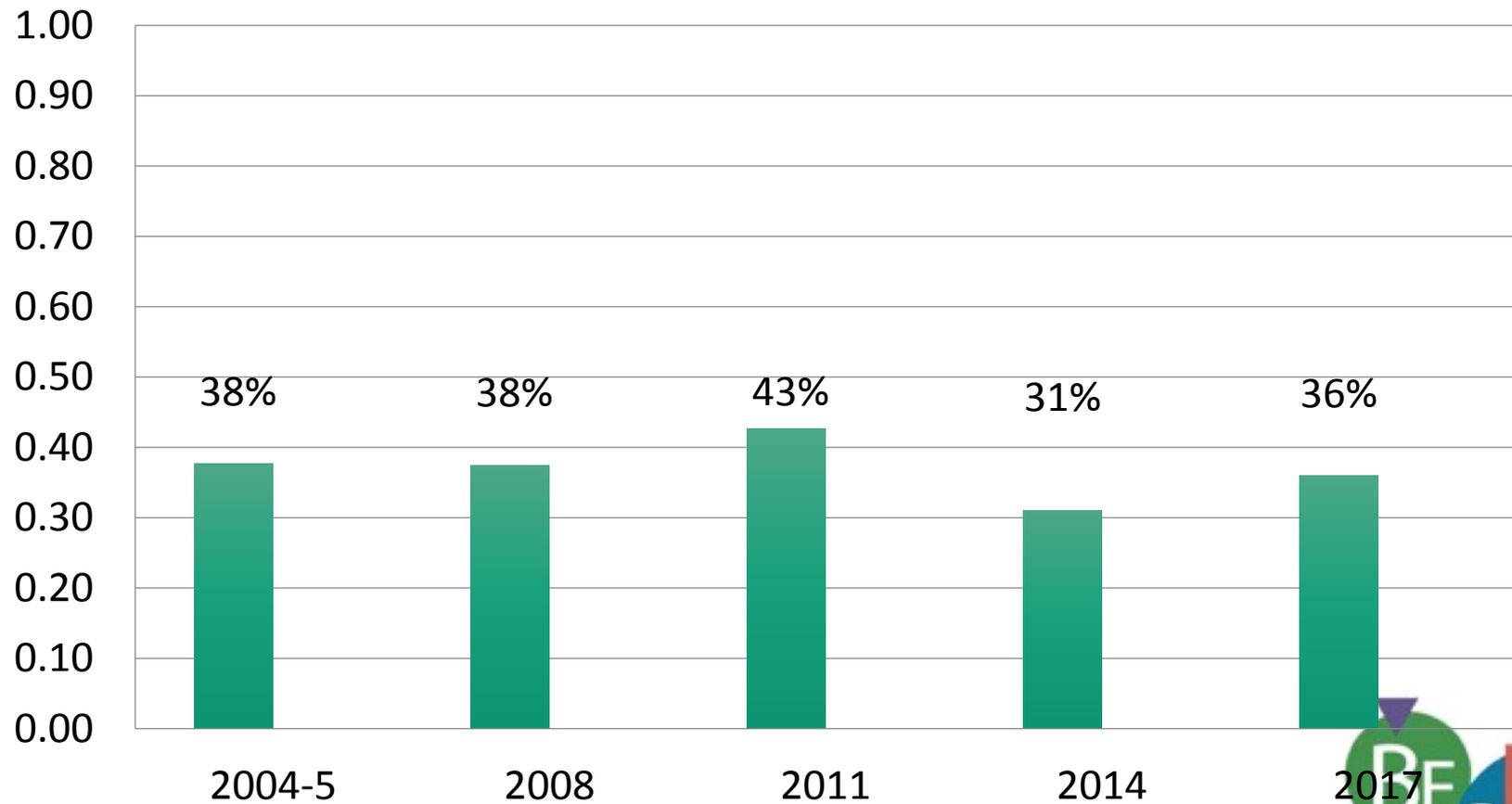
Recruitment methods

Survey wave	Population	Recruitment
2004-2005 2008 2011 2014 2017	MSM	Venue-based time location sampling
2006 2009 2012 2015 2018	IDU/PWID	Respondent driven sampling
2007	HET	Venue based time location sampling
2010 2013 2016	HET	Respondent driven sampling



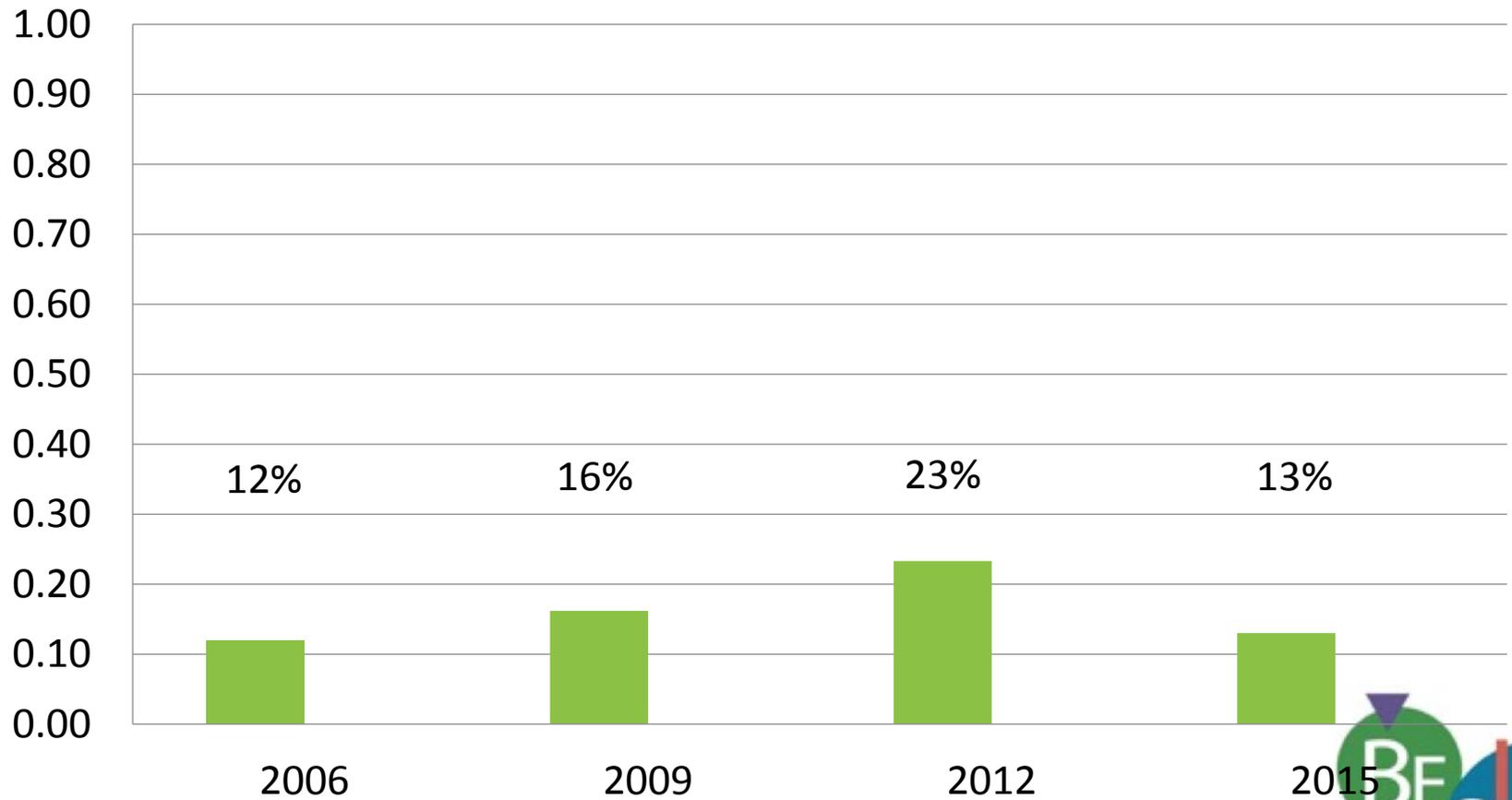
HIV prevalence: waves 2004-2017

BESURE MSM



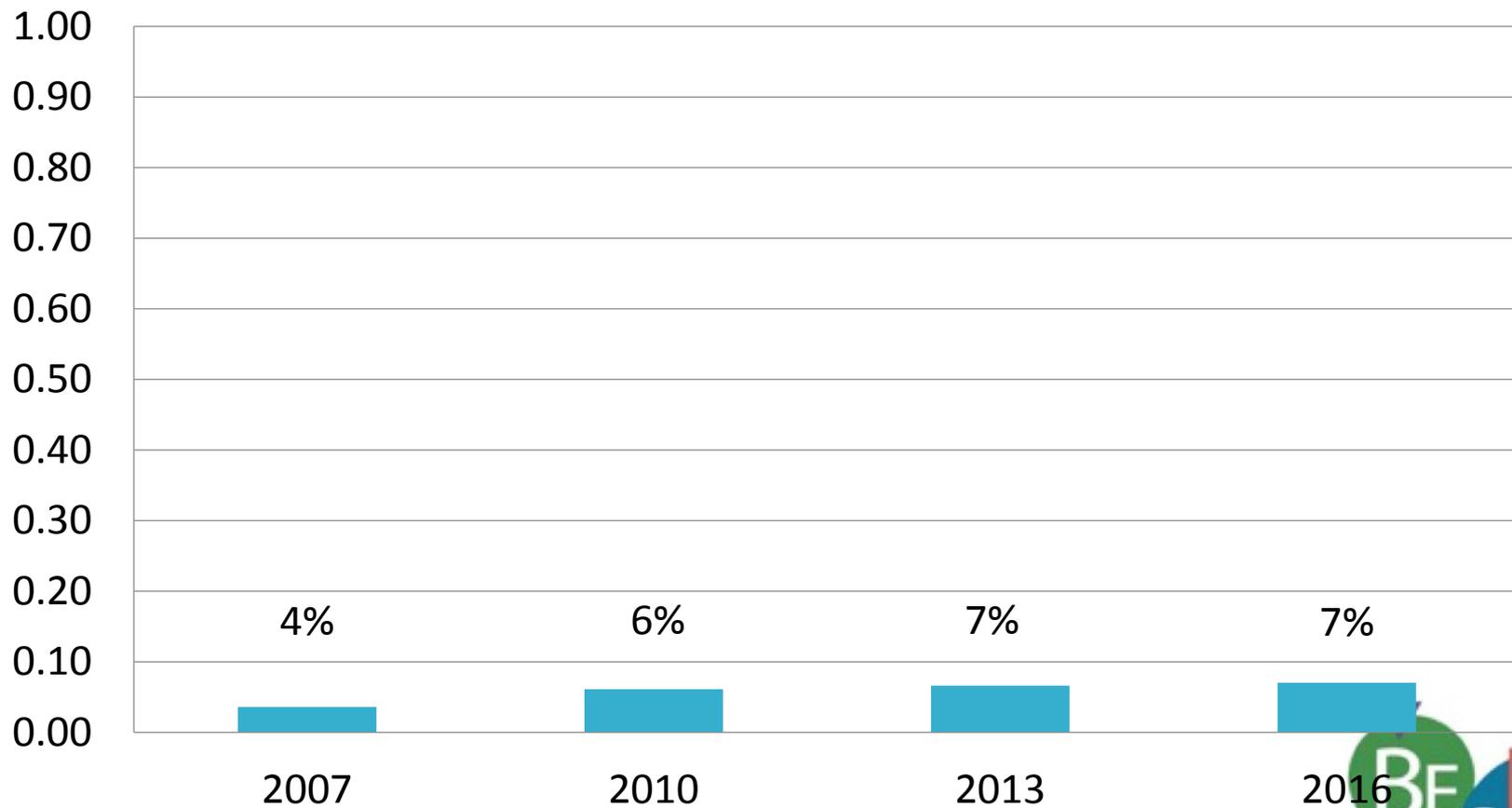
HIV prevalence:

BESURE IDU/PWID waves 2006-2015



HIV prevalence:

BESURE HET waves 2004-2016



HIV 'cascade' indicators



HIV 'cascade' indicators

HIV testing behavior

- Ever tested for HIV
- Tested in the past 2 years
- Tested in the past year

HIV diagnosis

- Positive test result
- Previously aware
- Newly diagnosed

HIV care (among self-report)

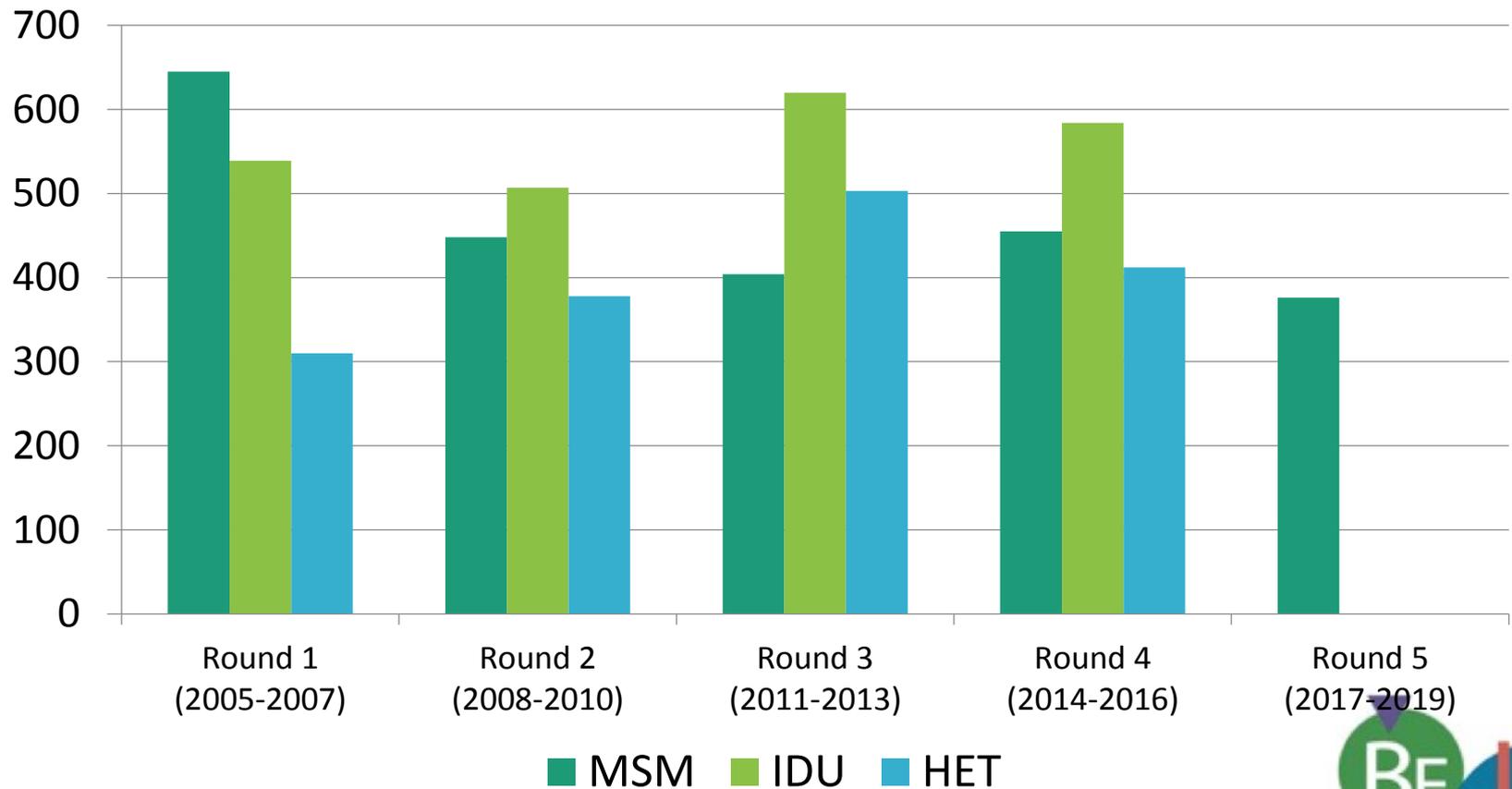
- Ever provider
- Past year
- Taking ARV

Virally suppressed (self-report)

- Self-reported viral suppression

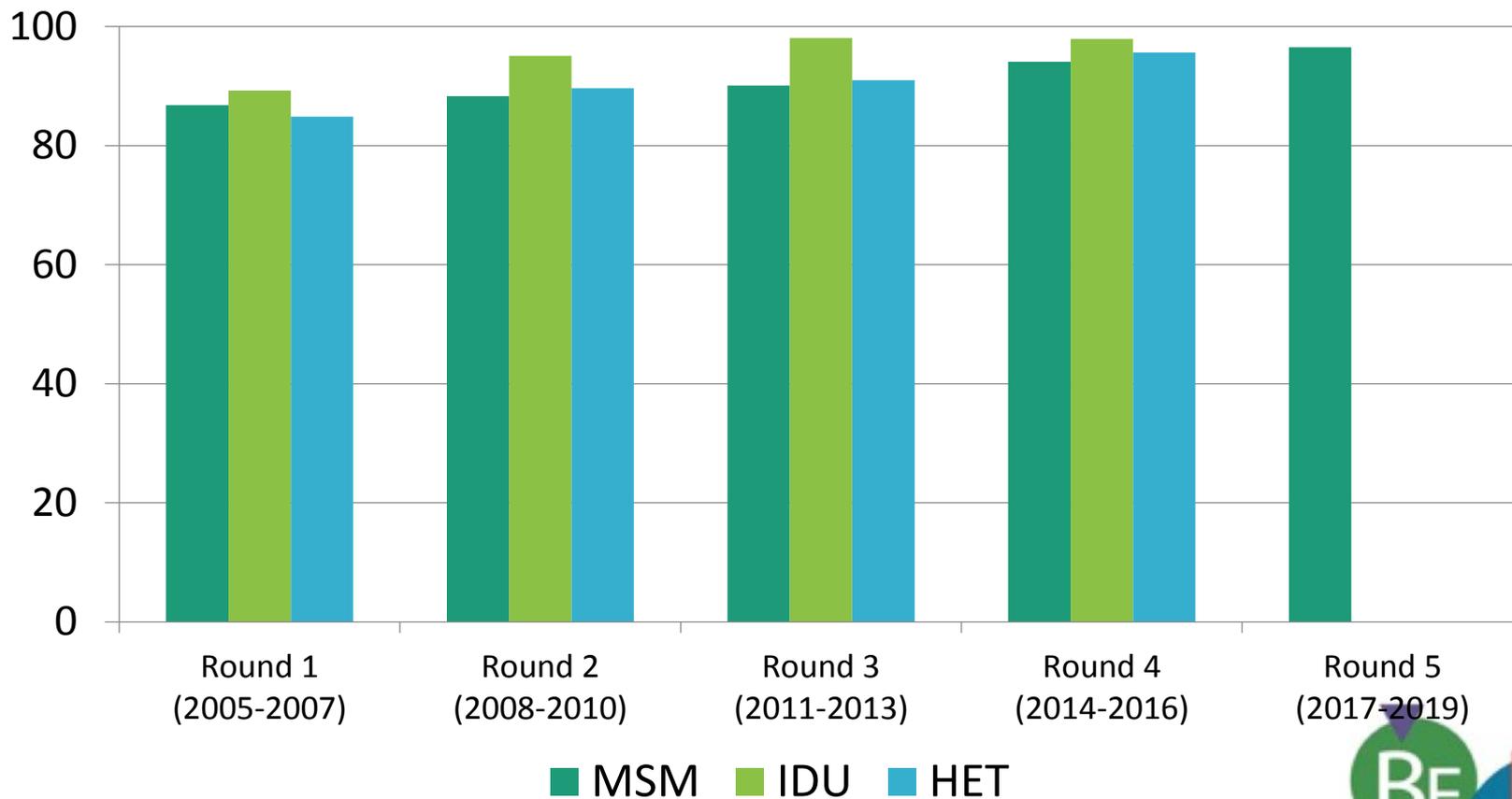


Sample size



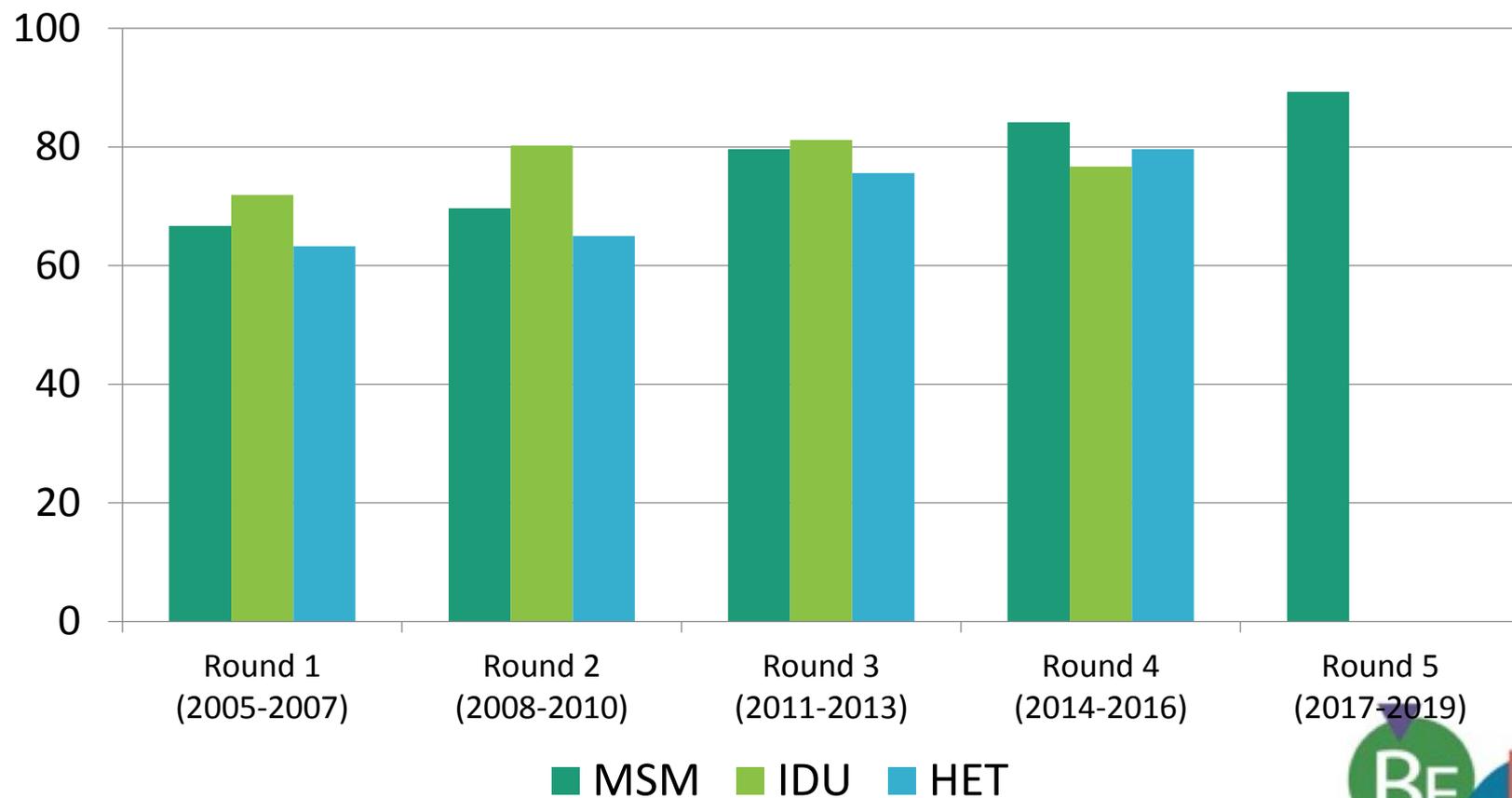
Ever tested for HIV

among all study participants



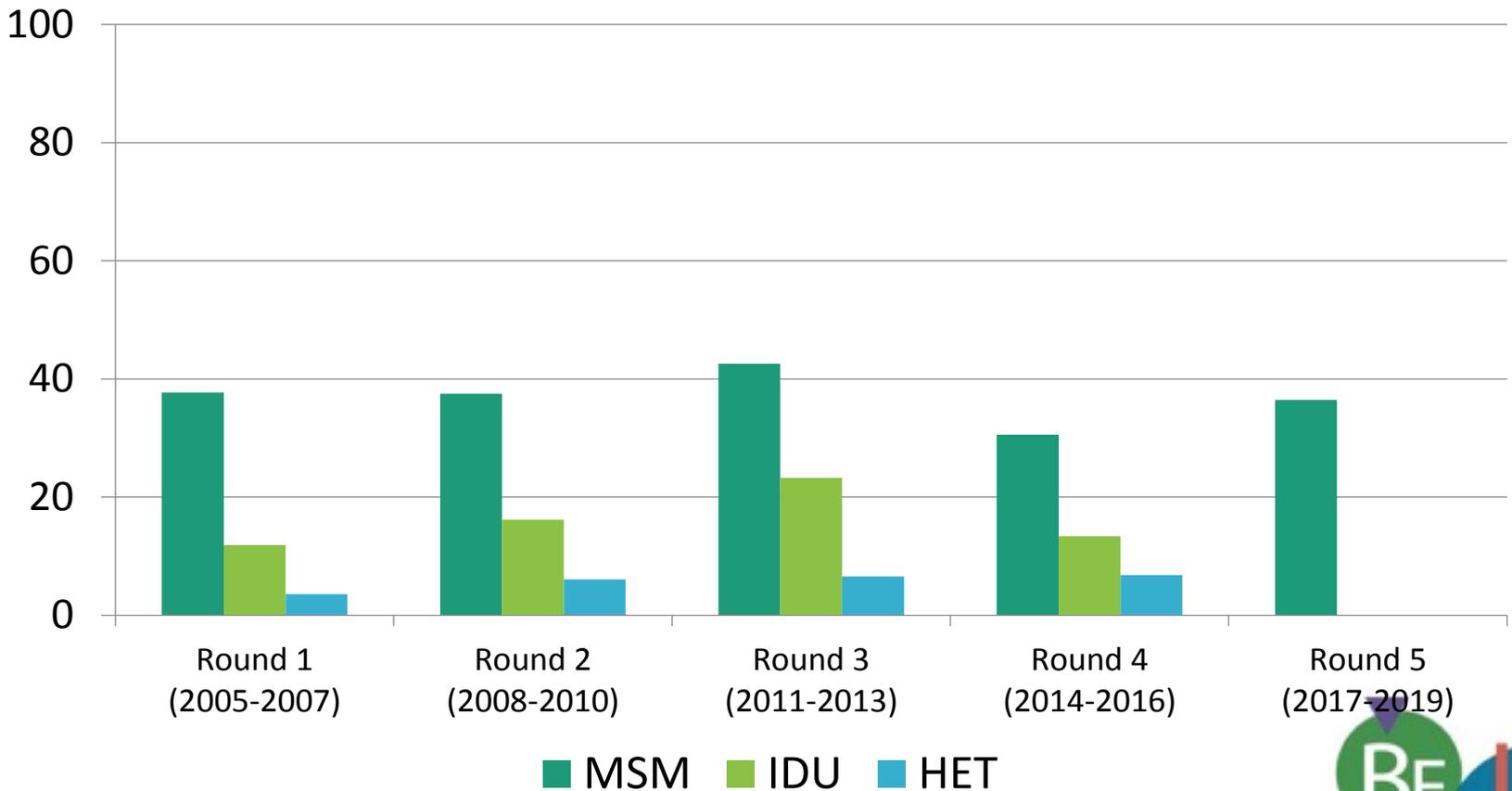
Tested in the past two years

among self-reported HIV-negative participants



HIV positive test result

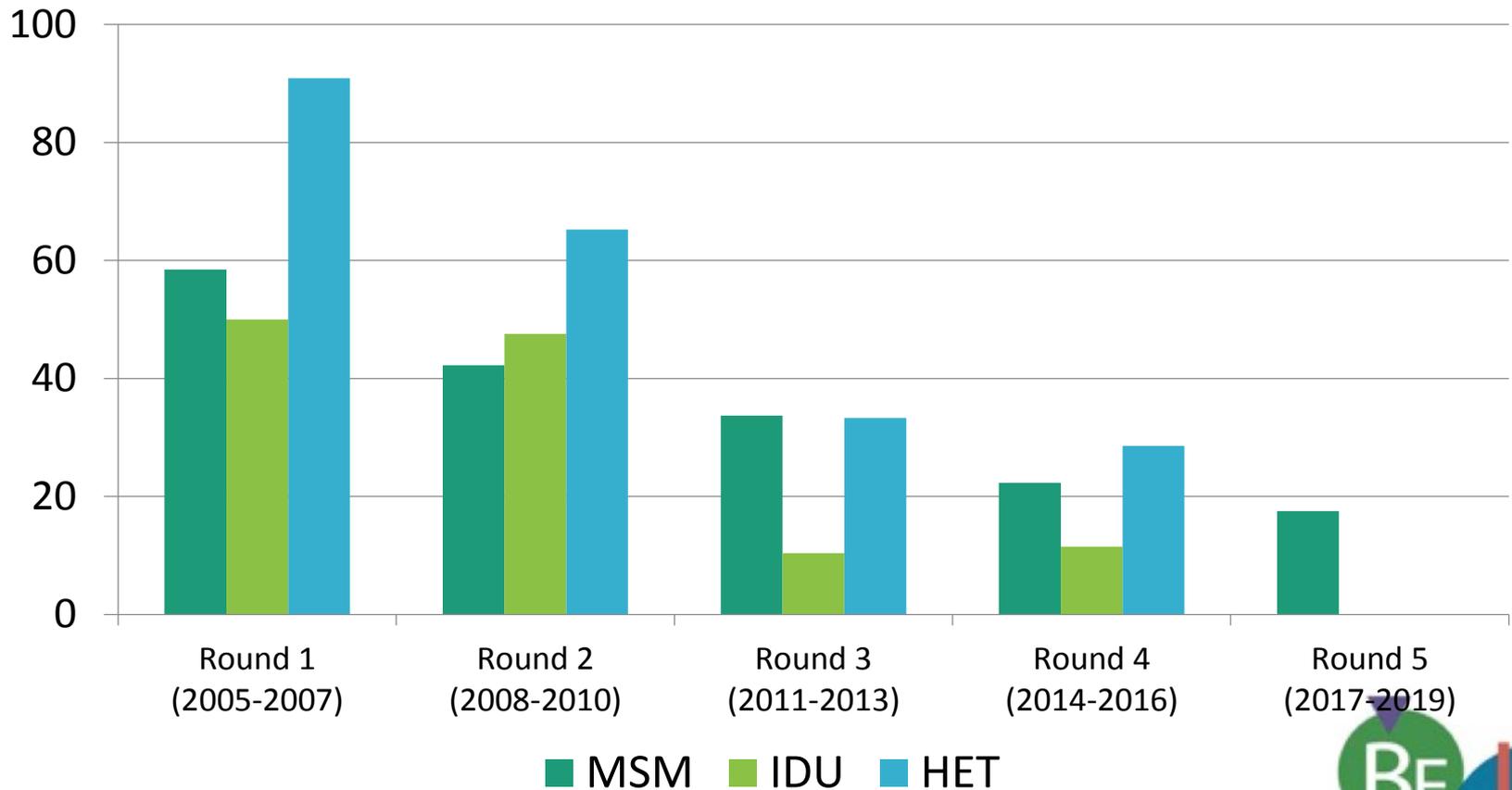
among all participants



Newly diagnosed

among participants who tested positive

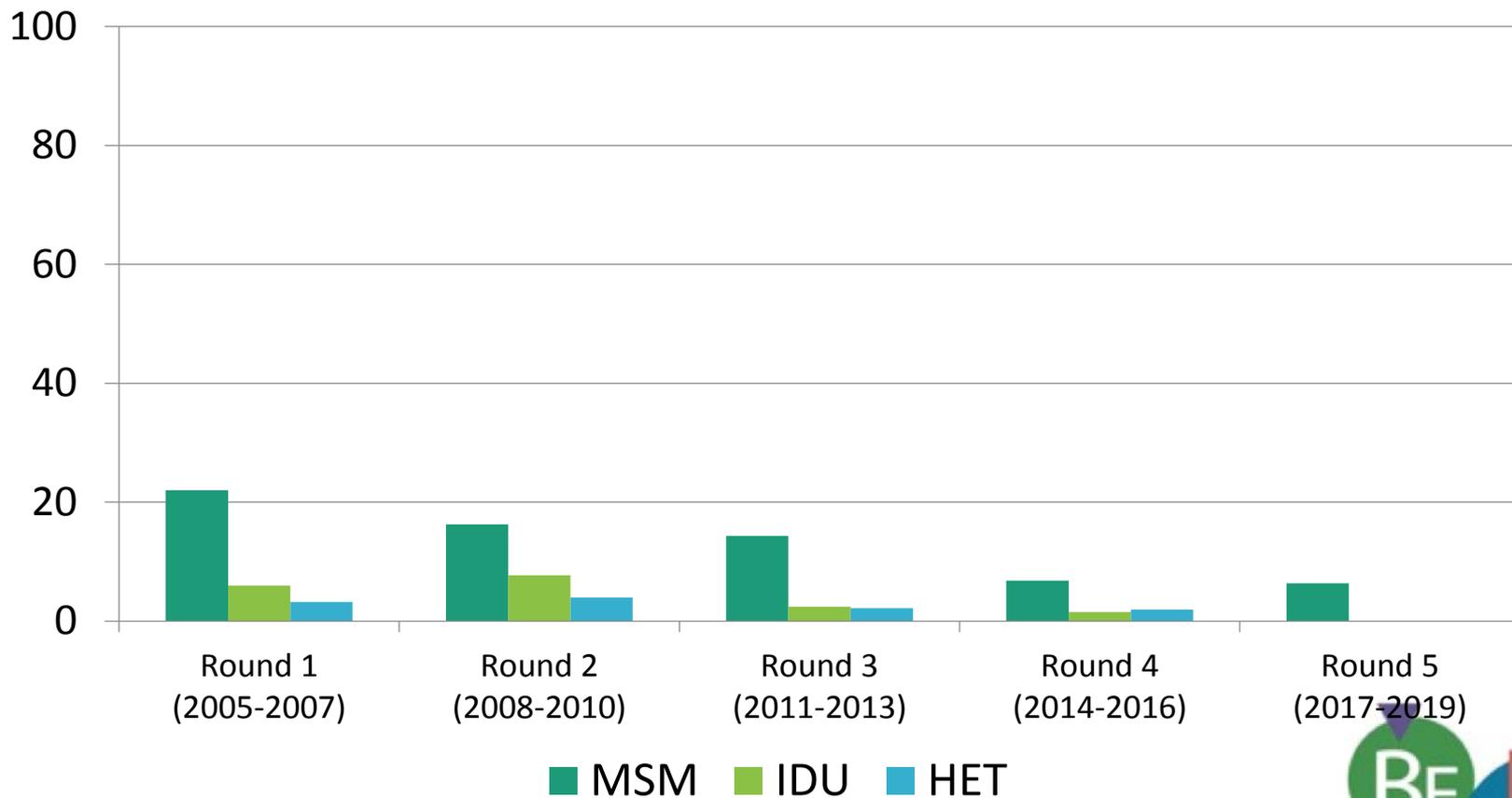
MSM2-4, IDU3-4 are ART-adjusted



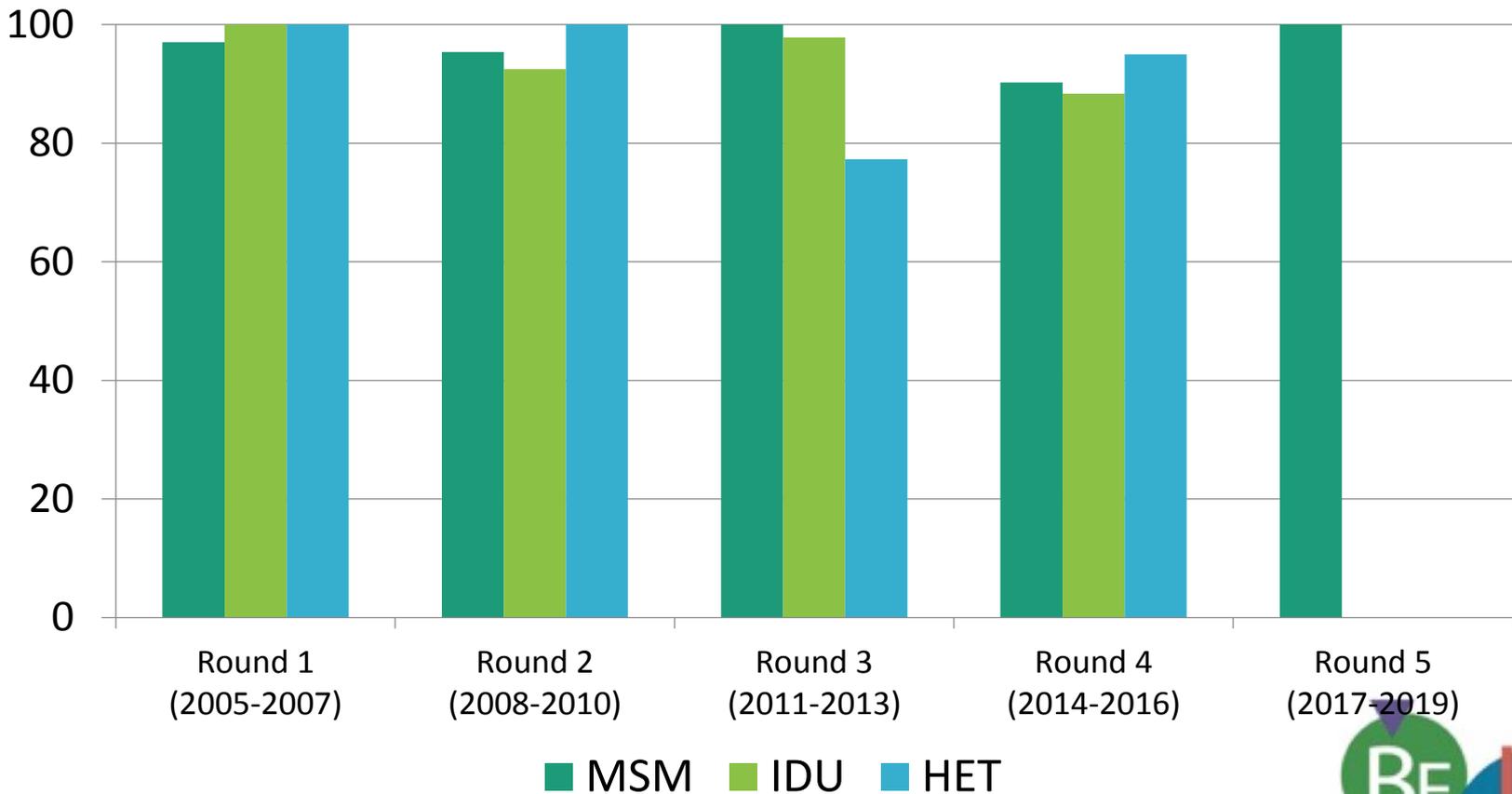
Newly diagnosed

among all participants

MSM2-4, IDU3-4 are ART-adjusted



Ever seen an HIV care provider among participants who reported an HIV diagnosis

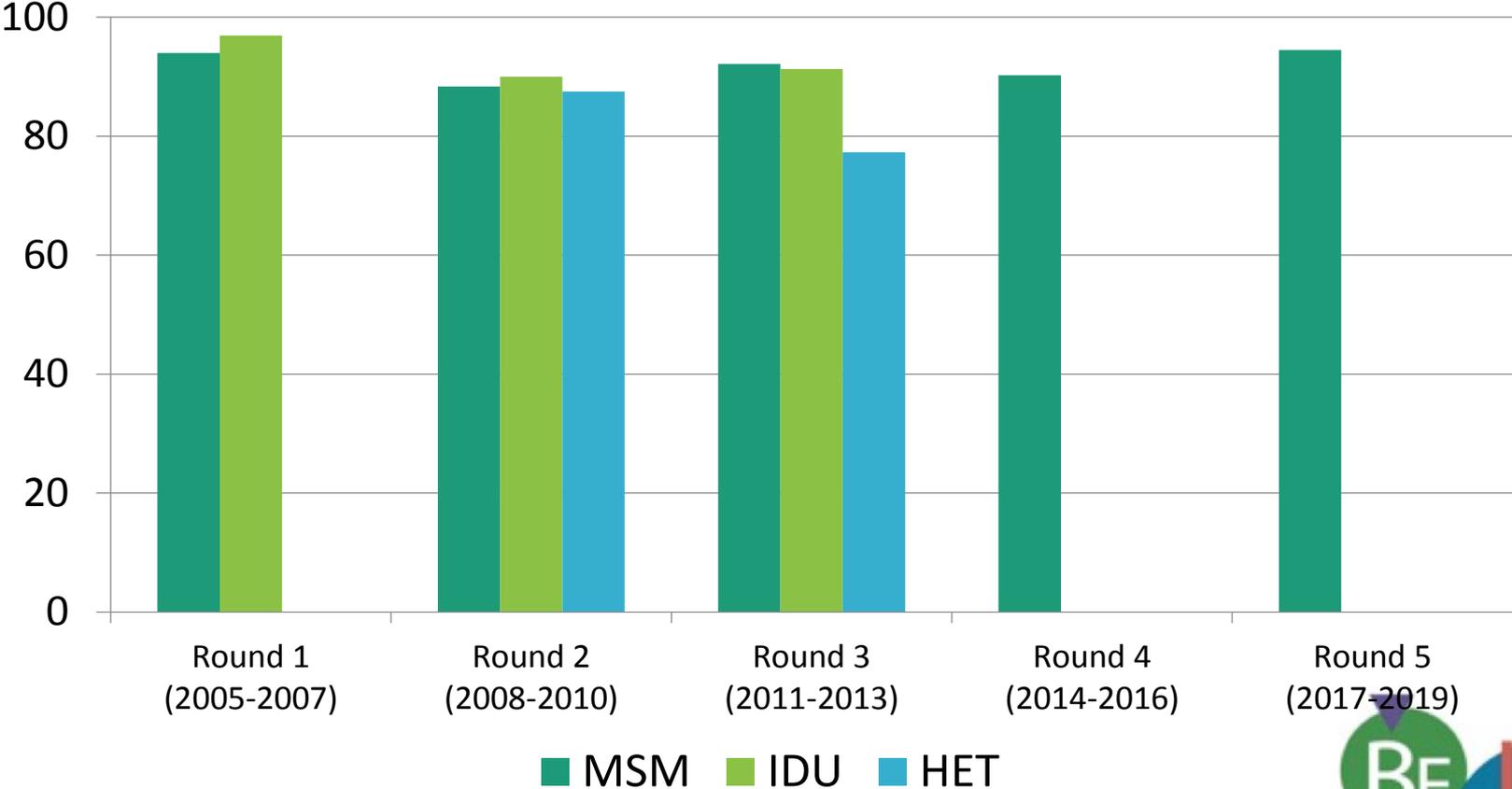


Note: small overall n,
especially in HET cycles



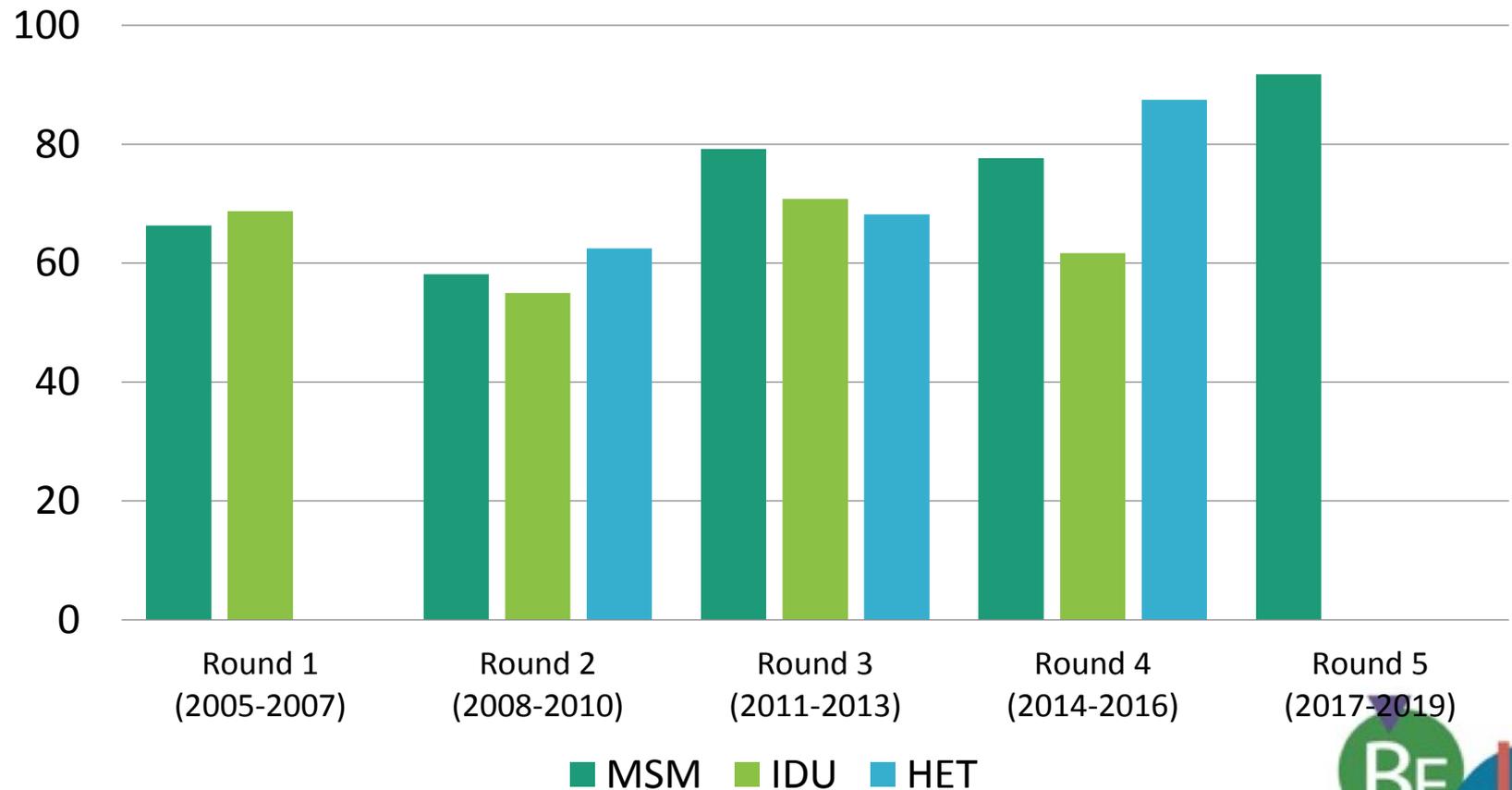
Seen an HIV care provider in the past year

among participants who reported an HIV diagnosis



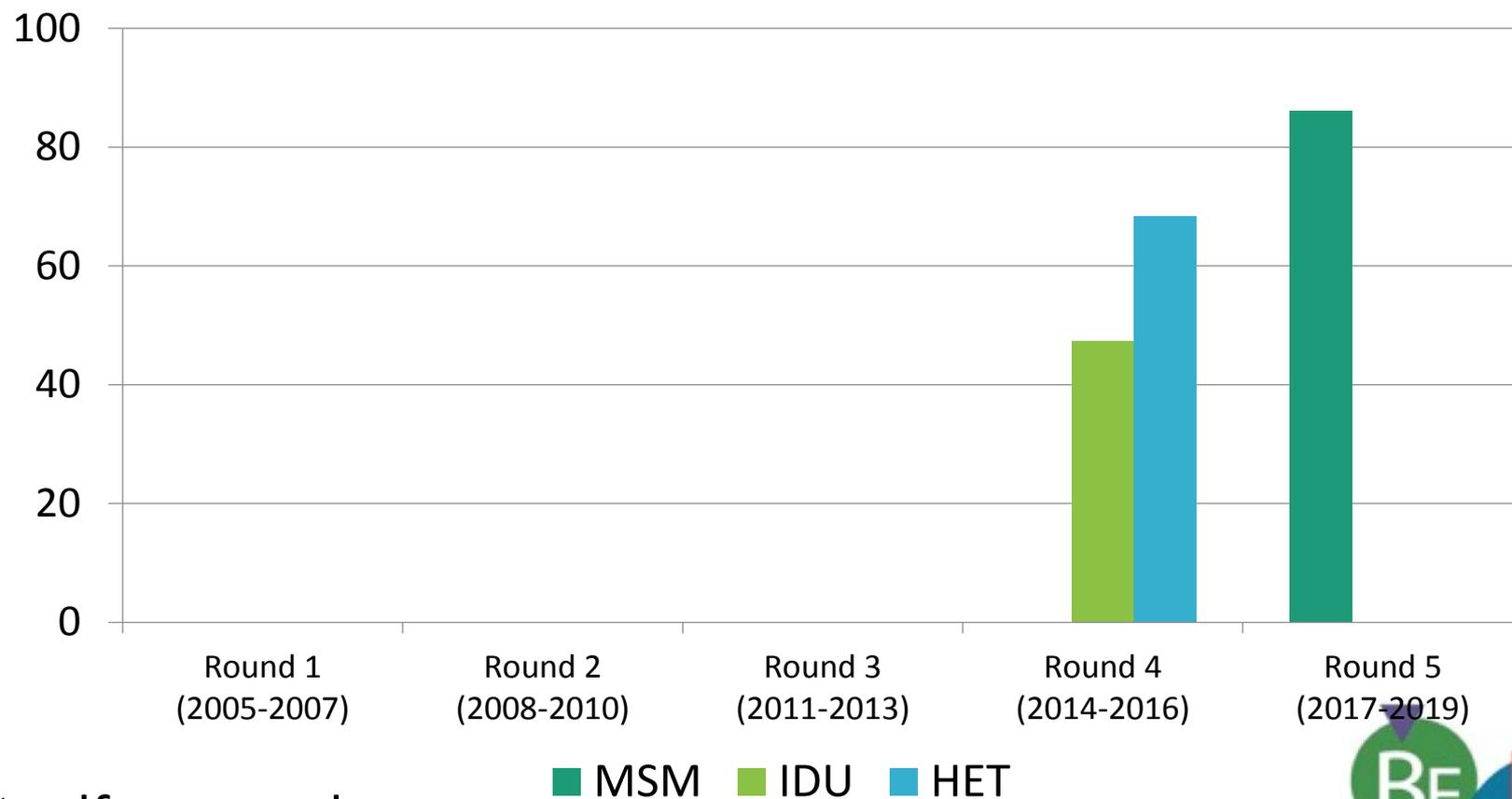
Taking antiretroviral medications

among participants who reported an HIV diagnosis



Viral suppression (undetectable*)

among participants who reported an HIV diagnosis

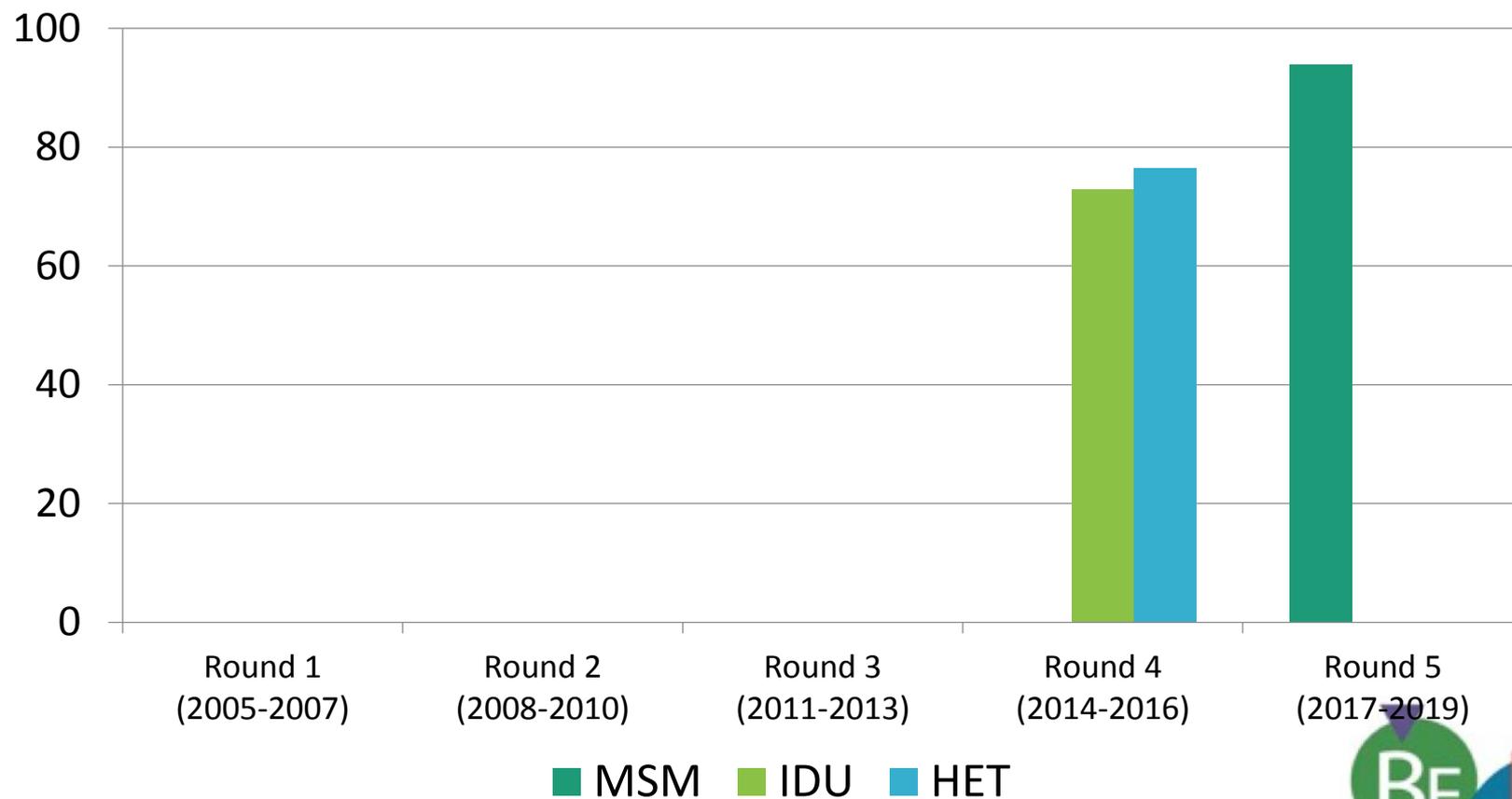


* self-reported



Viral suppression (undetectable*)

among participants who reported taking antiretroviral medications



* self-reported



Limitations

- Cross-sectional: not same samples, not causal
- Voluntary enrollment
- Self-report

- Population-based, but sampling method matters
- Sample characteristics differ across waves
- Implementation may differ across waves
- Not RDS or venue adjusted; no demographic adjustments



Overall

- News is favorable
- What I haven't shared in these results:
 - Behavioral factors very relevant
 - Social/structural factors persist
 - Differences by race/ethnicity, gender, age, sexual orientation, etc
- Underrepresented in these data:
 - Latinx populations
 - Transgender individuals (stay tuned)
 - Lesbian women and non-IDU WSW
 - MSM who don't attend MSM venues
 - PWID not socially linked in Baltimore networks
 - HET higher SES and/or not socially linked to areas of high poverty/high HIV
 - Younger people



BESURE MSM data update

Socio-demographics and key indicators

Behavioral trends

Social determinants trends

PrEP awareness and use

Stigma and discrimination



Socio-demographics and key indicators, BESURE MSM 2008-2017

Characteristic		MSM3 (n=404)	MSM4 (n=455)	MSM5 (n=376)
Race/ Ethnicity **	White, not Hispanic	14%	23%	15%
	Black, not Hispanic	77%	64%	69%
	Hispanic	2%	4%	5%
	Other	7%	9%	12%
Age **	18-25	31%	24%	13%
	25-34	27%	38%	42%
	35-44	17%	15%	20%
	45-60	26%	23%	21%
Sexual identity	Straight/ heterosexual	3%	3%	3%
	Gay/ Homosexual	64%	69%	66%
	Bisexual	33%	28%	31%
Education ***	High school/GED or less	58%	40%	44%
	College or some	33%	60%	56%

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$, statistically significant differences are between MSM3 & MSM4



Socio-demographics and key indicators, BESURE MSM 2008-2017

Characteristic		MSM3 (n=404)	MSM4 (n=455)	MSM5 (n=376)
Employment ***	Unemployed	31%	19%	24%
	Full or Part-time	50%	61%	64%
Median annual household income ***	(mid-point)	\$10,000-\$19,999	\$20,000-\$39,999	\$20,000-\$24,999
Homelessness *	Past year	17%	12%	15%
	Current	7%	6%	6%
Incarcerated **	Past year	14%	8%	4%
Injection drug use	Ever	9%	8%	9%

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$, statistically significant differences are between MSM3 & MSM4



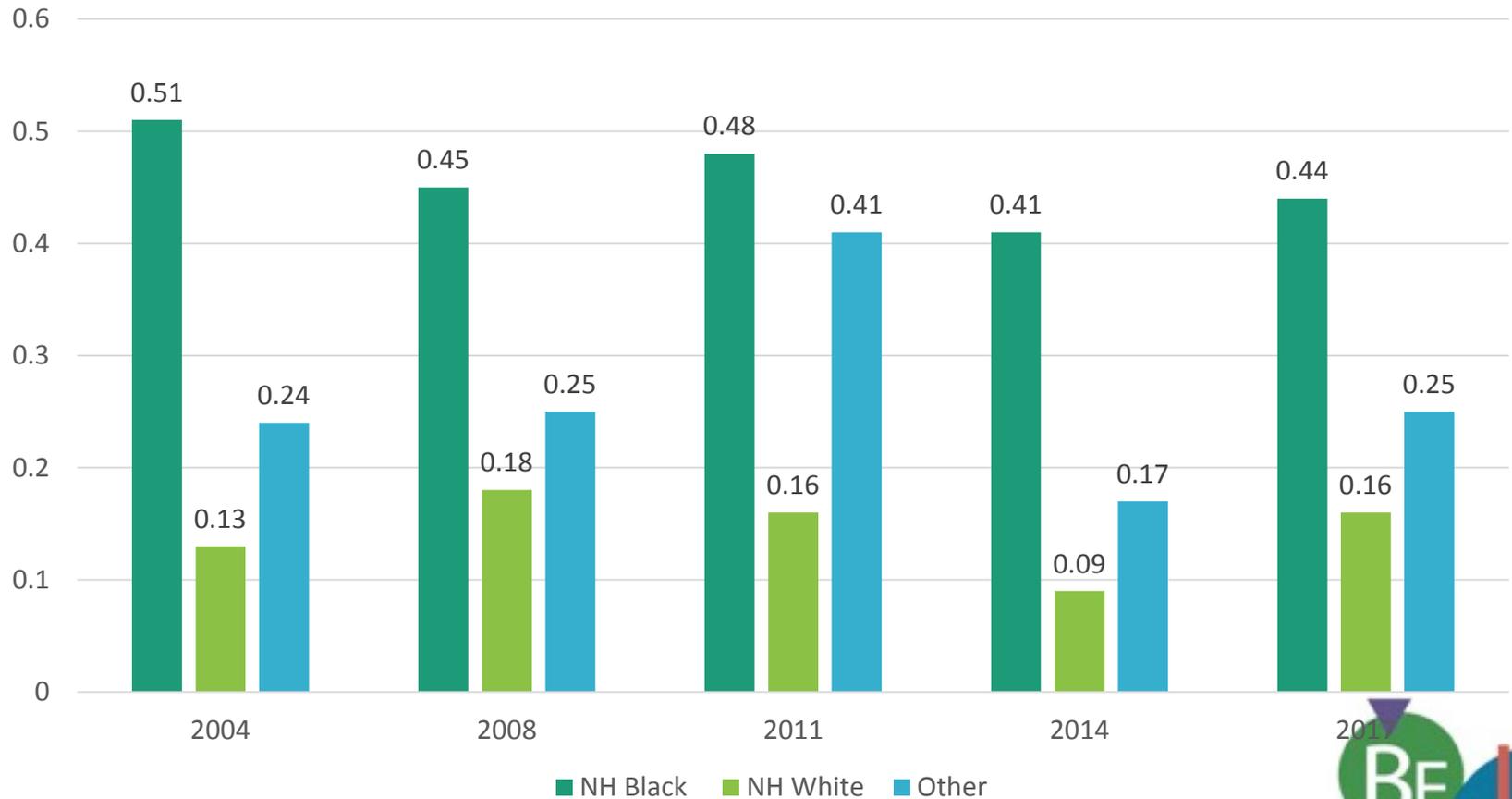
Socio-demographics and key indicators, BESURE MSM 2008-2017

Characteristic		MSM3 (n=404)	MSM4 (n=455)	MSM5 (n=376)
Sex partners in past year	Male only	75%	79%	77%
	Male and female	25%	21%	23%
# male partners in past year	1	27%	30%	32%
	2-3	39%	34%	34%
	4-8	22%	24%	22%
	9+	12%	12%	11%
Condomless anal sex past year **	Any	52%	66%	59%
Received money or goods in exchange for sex **	Past year	24%	15%	12%

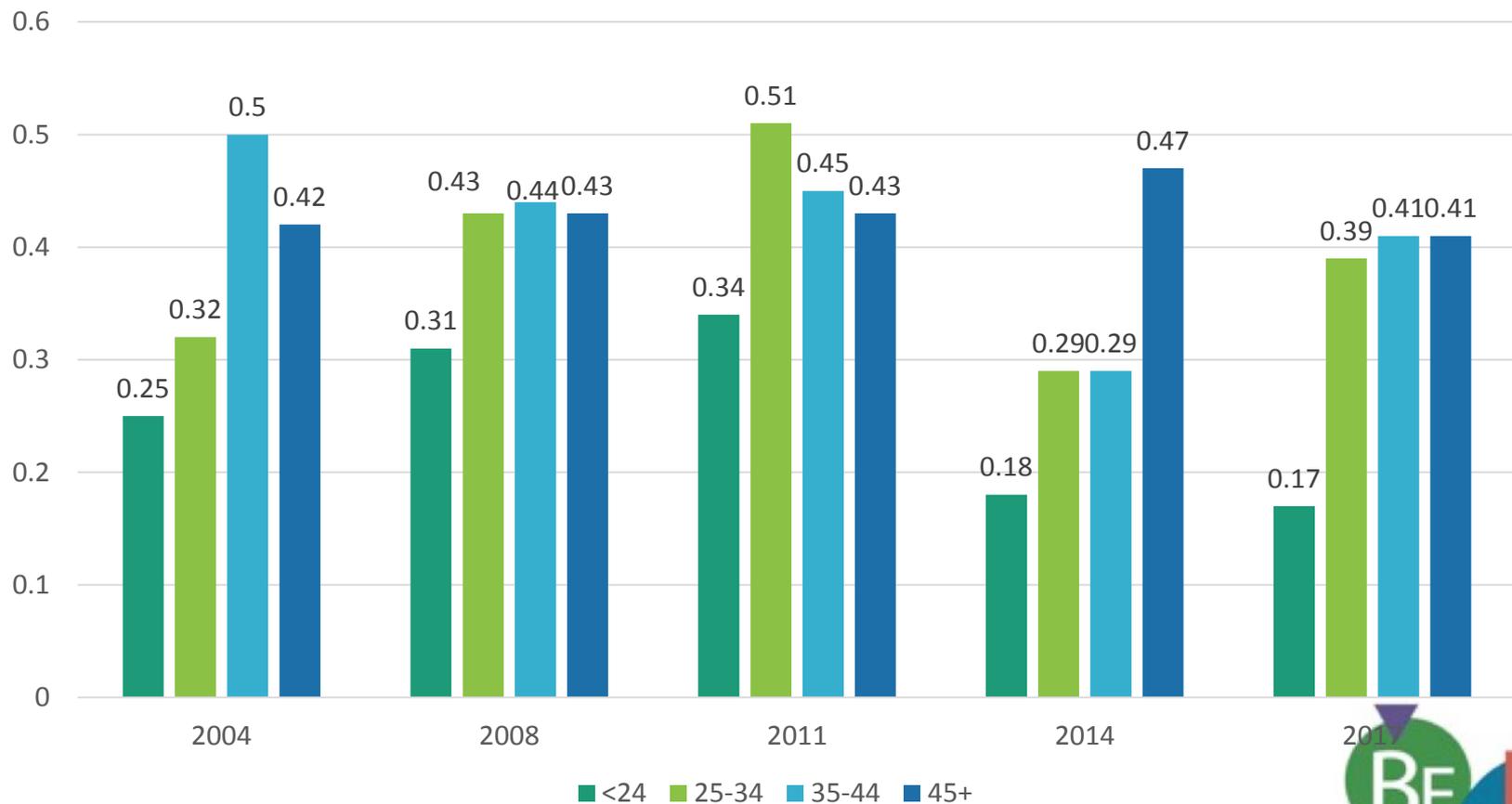
* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$, statistically significant differences are between MSM3 & MSM4



HIV prevalence by race/ ethnicity: MSM 2004-2017



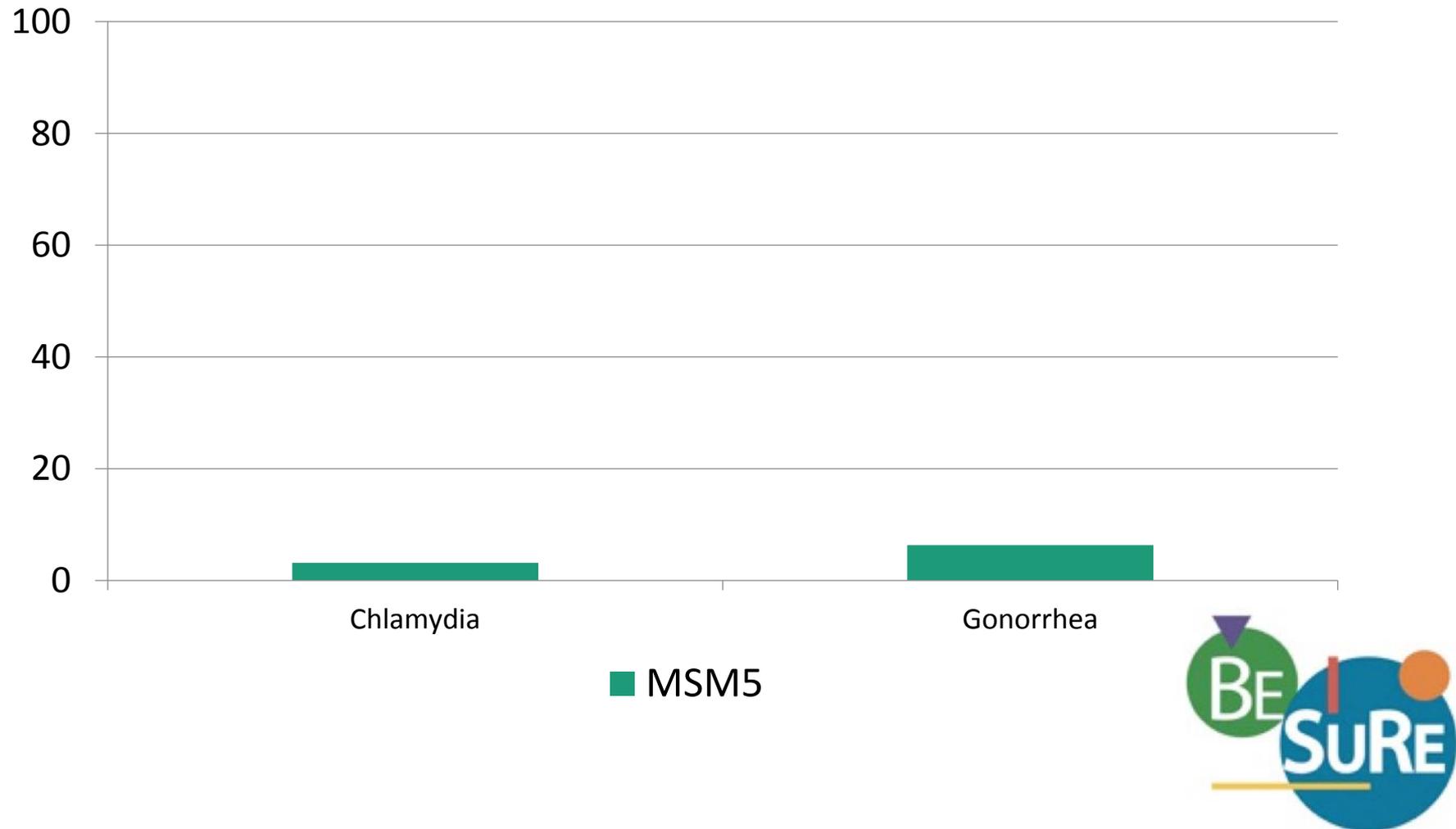
HIV prevalence by age: MSM 2004-2017



STI prevalence

among 126
participants tested

3.17% chlamydia (n=4)
6.35% gonorrhoea (n=8)



Trends in sexual and testing behaviors by self-reported HIV status

- Multiple partners in past year
- Condomless anal intercourse past year
 - With main partners
 - With casual partners
 - During last sexual contact
 - Serodiscordant partnership
- Use internet to meet partners
- Drug use during sex
- HIV testing
 - Ever
 - In past year
 - Physician recommended
- And differences by race/ethnicity and age



Trends in sexual behaviors and HIV testing, 2008-2014

Among MSM who self-reported HIV negative status

	HIV NEGATIVE			PRa (95% CI) for linear trend
	2008	2011	2014	
MP	n=471 175 (37.15)	n=349 170 (48.71)	n=416 198 (47.60)	1.10 (1.03-1.19)
UAI	n=471 157 (33.33)	n=349 148 (42.41)	n=416 222 (53.37)	1.24 (1.15-1.33)
MAIN	n=471 249 (52.87)	n=349 204 (58.45)	n=416 226 (54.33)	1.01 (0.94-1.05)
CASUAL	n=471 294 (62.42)	n=349 236 (67.62)	n=416 286 (68.75)	1.04 (0.99-1.09)
UAIM	n=249 130 (52.21)	n=204 116 (56.86)	n=226 159 (70.35)	1.14 (1.06-1.23)
UAIC	n=294 140 (47.62)	n=236 106 (44.92)	n=286 174 (60.84)	1.14 (1.06-1.24)
UAI LC	n=471 74 (15.71)	n=349 88 (25.21)	n=416 124 (29.81)	1.32 (1.17-1.49)
SD	n=471	n=349	n=416	
SD (- with +)	18 (3.82)	8 (2.29)	13 (3.13)	0.85 (0.58-1.25)
SD (+ with u)	-	-	-	-
UAI SD	n=74	n=88	n=124	
SD (- with +)	4 (5.41)	6 (6.82)	6 (4.84)	0.98 (0.60-1.61)
SD (+ with u)	-	-	-	-
INTERNET	n=471 126 (26.75)	n=349 154 (44.13)	n=416 220 (52.88)	1.34 (1.24-1.45)
DRUG USE	n=471 161 (34.18)	n=349 132 (37.82)	n=416 147 (35.34)	1.01 (0.93-1.11)
EVER TEST	n=471 471 (100)	n=349 349 (100)	n=416 416 (100)	-
TEST 12M	n=471 280 (59.45)	n=349 237 (67.91)	n=416 265 (63.70)	1.04 (0.98-1.09)
REC HIV	n=471 229 (48.62)	n=349 177 (50.72)	n=416 209 (50.24)	1.02 (0.96-1.09)

PRa: Prevalence ratio adjusted by age, race, sexual orientation and education.

Bold: statistically significant trend (p-value<0.05)



Trends in sexual behaviors and HIV testing, 2008-2014

Among MSM who self-reported HIV positive status

MP	HIV POSITIVE			PRa (95% CI) for linear trend
	2008	2011	2014	
MP	n=51 26 (50.98)	n=57 25 (43.86)	n=95 43 (45.26)	0.95 (0.79-1.14)
UAI	n=51 23 (45.10)	n=57 29 (50.88)	n=95 54 (56.84)	1.12 (0.94-1.32)
MAIN	n=51 32 (62.75)	n=57 41 (71.93)	n=95 53 (55.79)	0.93 (0.81-1.06)
CASUAL	n=51 41 (80.39)	n=57 35 (61.40)	n=95 61 (64.21)	0.91 (0.82-1.01)
UAIM	n=32 17 (53.13)	n=41 23 (56.10)	n=53 39 (73.58)	1.18 (0.99-1.42)
UAIC	n=41 21 (51.22)	n=35 22 (62.86)	n=61 38 (62.30)	1.08 (0.91-1.28)
UAI LC	n=51 13 (25.49)	n=57 15 (26.32)	n=95 31 (32.63)	1.10 (0.83-1.45)
SD	n=51 16 (31.37)	n=57 14 (24.56)	n=95 30 (31.58)	1.03 (0.79-1.35)
SD (- with +)	25 (49.02)	22 (38.60)	36 (37.89)	0.91 (0.75-1.10)
SD (+ with u)				
UAI SD	n=13 3 (23.08)	n=15 4 (26.67)	n=31 10 (32.26)	1.17 (0.66-2.07)
SD (- with +)	5 (38.46)	5 (33.33)	7 (22.58)	0.81 (0.52-1.27)
SD (+ with u)				
INTERNET	n=51 19 (37.25)	n=57 31 (54.39)	n=95 52 (54.74)	1.19 (0.99-1.42)
DRUG USE	n=51 26 (50.98)	n=57 22 (38.60)	n=95 34 (35.79)	0.86 (0.70-1.05)
EVER TEST	Data Table			
TEST 12M				
REC HIV				

PRa: Prevalence ratio adjusted by age, race, sexual orientation and education.

Bold: statistically significant trend (p-value<0.05)



Trends in sexual behaviors and HIV testing, 2008-2014

Among MSM who did not know their HIV status

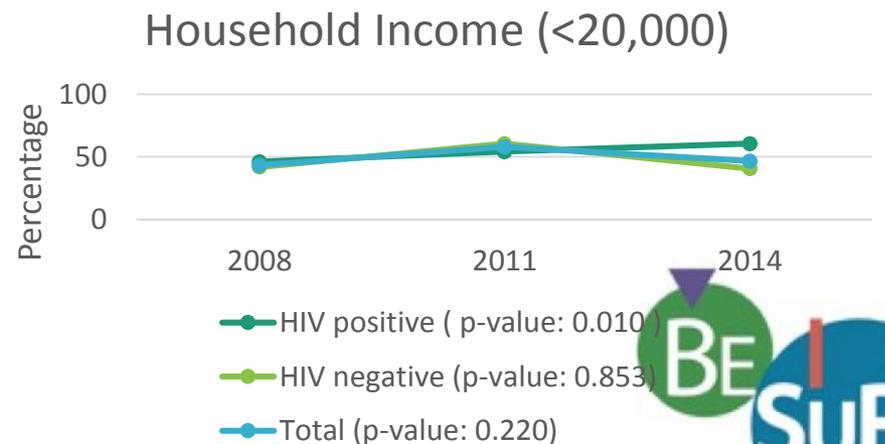
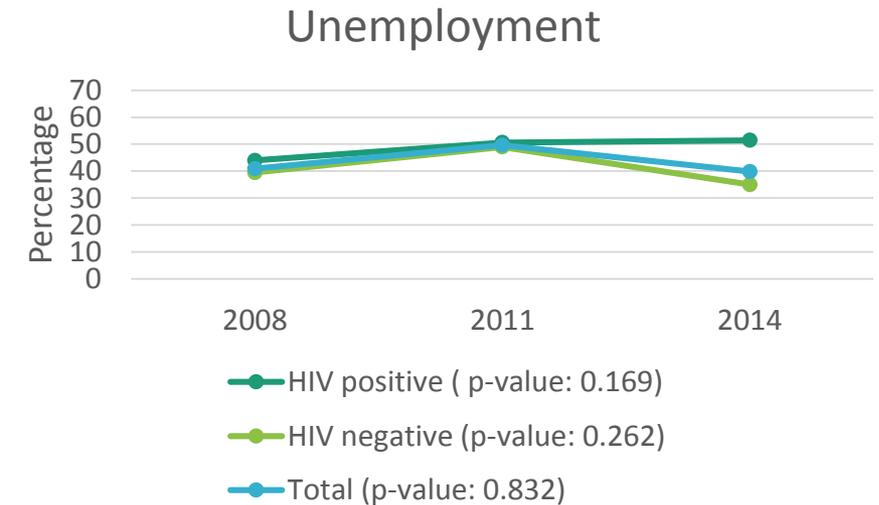
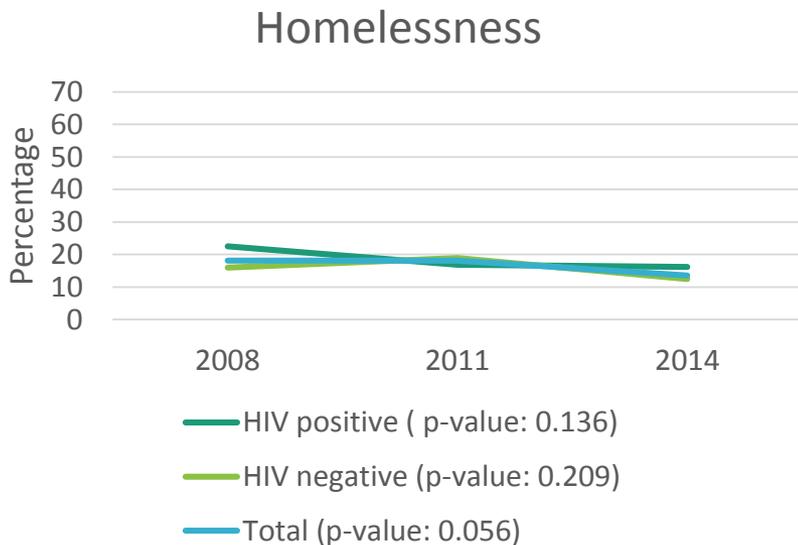
MP	HIV UNKNOWN			PRa (95% CI) for linear trend
	2008	2011	2014	
	n=135	n=89	n=55	
MP	52 (38.52)	45 (50.56)	24 (43.64)	1.08 (0.92-1.28)
UAI	n=135 48 (35.56)	n=89 42 (47.19)	n=55 33 (60)	1.26 (1.08-1.46)
MAIN	n=135 53 (39.26)	n=89 45 (50.56)	n=55 30 (54.55)	1.12 (0.97-1.30)
CASUAL	n=135 73 (54.07)	n=89 59 (66.29)	n=55 36 (65.45)	1.10 (0.98-1.23)
UAIM	n=53 37 (69.81)	n=45 30 (66.67)	n=30 22 (73.33)	1.03 (0.89-1.19)
UAIC	n=73 41 (56.16)	n=59 32 (54.24)	n=36 24 (66.67)	1.12 (0.96-1.30)
UAI LC	n=135 27 (20)	n=89 22 (24.72)	n=55 19 (34.55)	1.23 (0.96-1.57)
SD	n=135	n=89	n=55	
SD (- with +)	-	-	-	
SD (+ with u)	4 (2.96)	8 (8.99)	2 (3.64)	1.11 (0.63-1.96)
UAI SD	n=27	n=22	n=19	
SD (- with +)	-	-	-	
SD (+ with u)	2 (7.41)	4 (18.18)	0 (0)	0.64 (0.34-1.21)
INTERNET	n=135 25 (18.52)	n=89 30 (33.71)	n=55 24 (43.64)	1.50 (1.21-1.86)
DRUG USE	n=135 45 (33.33)	n=89 38 (42.70)	n=55 22 (40)	1.15 (0.95-1.39)
EVER TEST	n=135 60 (44.44)	n=89 37 (41.57)	n=55 22 (40)	0.99 (0.83-1.18)
TEST 12M	n=135 28 (20.74)	n=89 28 (31.46)	n=55 19 (34.55)	1.38 (1.09-1.74)
REC HIV	n=135 33 (24.44)	n=89 24 (26.97)	n=55 16 (29.09)	1.10 (0.86-1.42)

PRa: Prevalence ratio adjusted by age, race, sexual orientation and education.

Bold: statistically significant trend (p-value<0.05)



Social determinants of health among MSM, BESURE 2008-2014

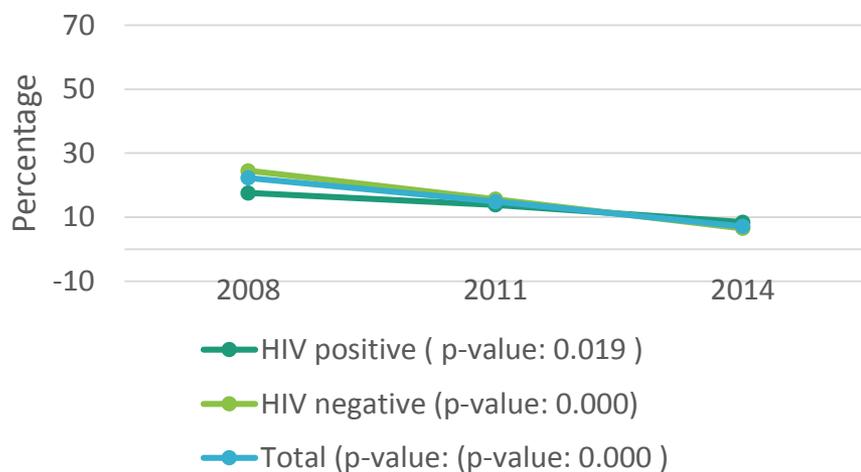


Adjusted for age, race/ethnicity, sexual orientation, education

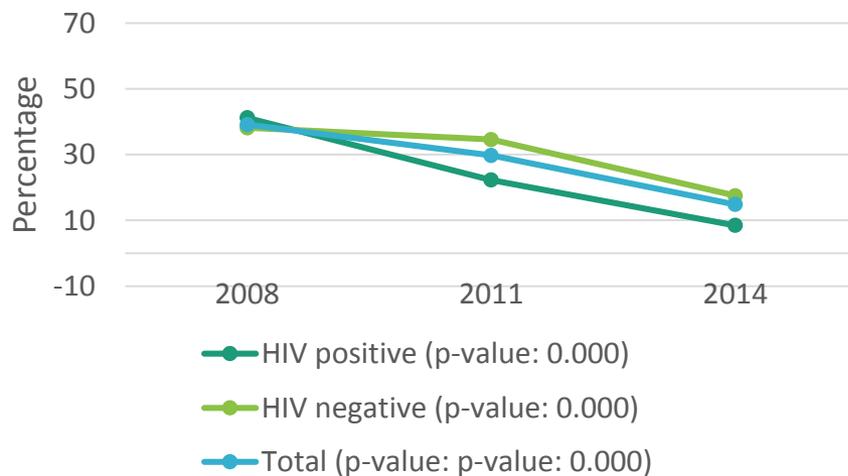


Social determinants of health among MSM, BESURE 2008-2014

Incarceration



No Health Insurance



Adjusted for age, race/ethnicity, sexual orientation, education



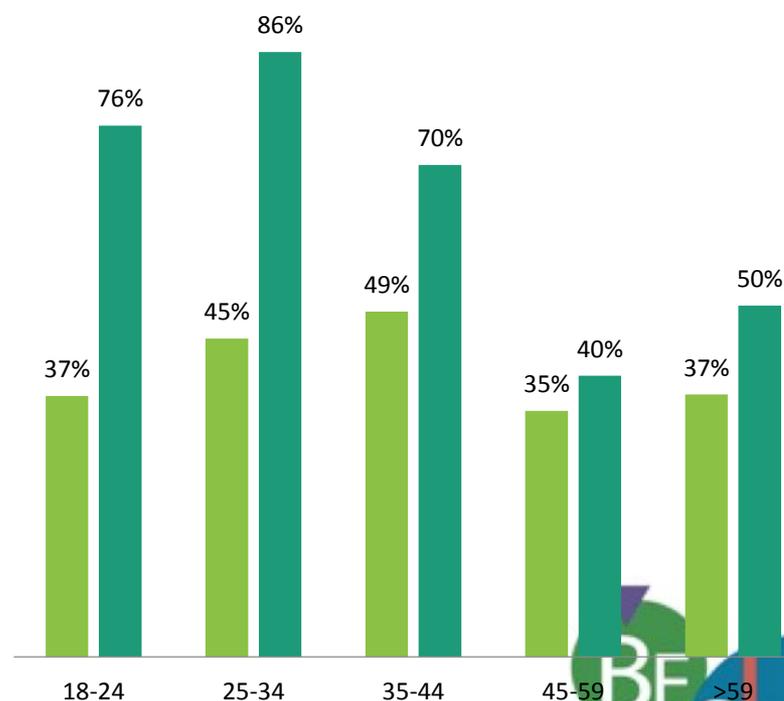
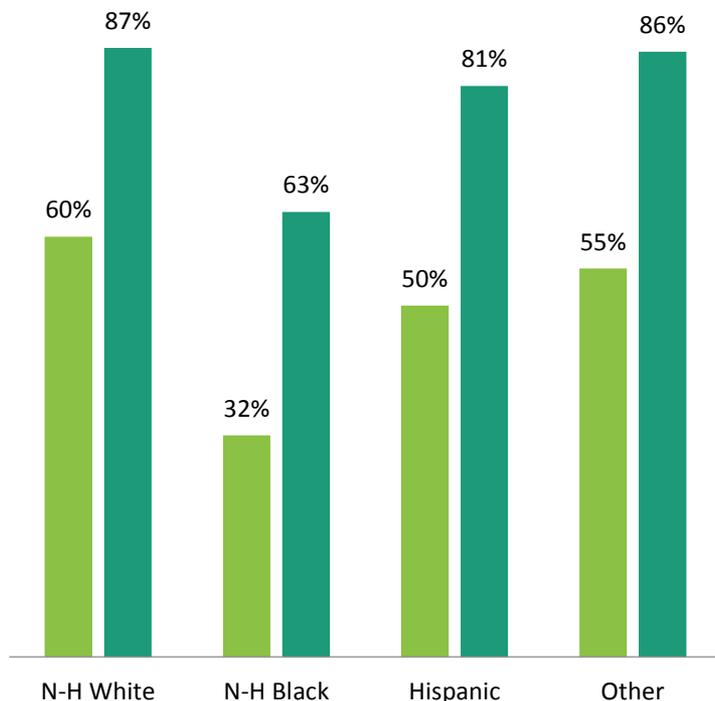
Prep awareness among self-reported HIV-negative MSM, BESURE 2014 & 2017

by race/ethnicity

by age

■ MSM4 ■ MSM5

■ MSM4 ■ MSM5

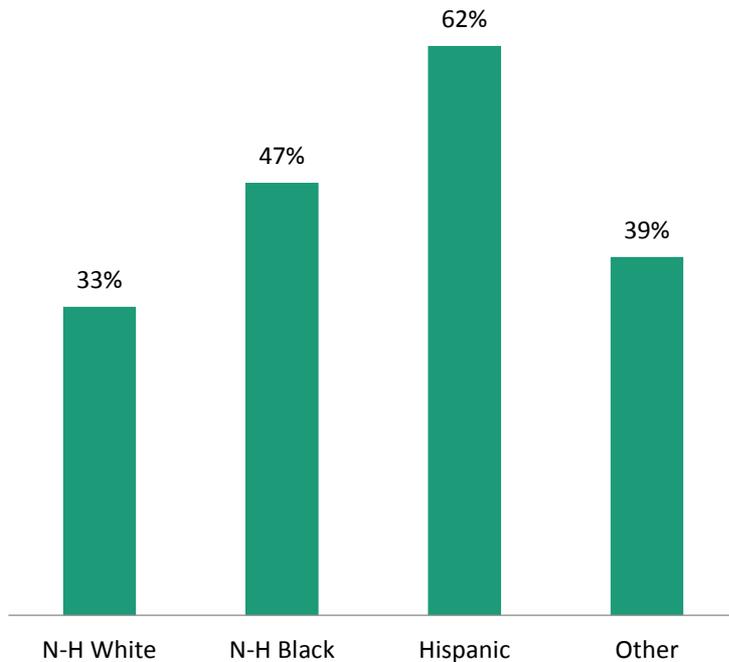


* Overall PrEP awareness: MSM4= 41.94%, MSM5 = 71%.

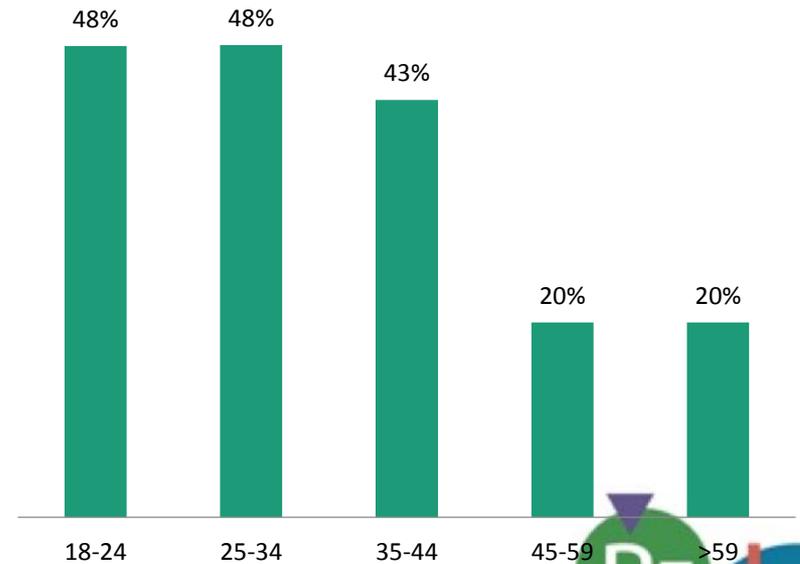


Talked with healthcare provider about PrEP, self-reported HIV-negative MSM, BESURE 2017

by race/ethnicity



by age

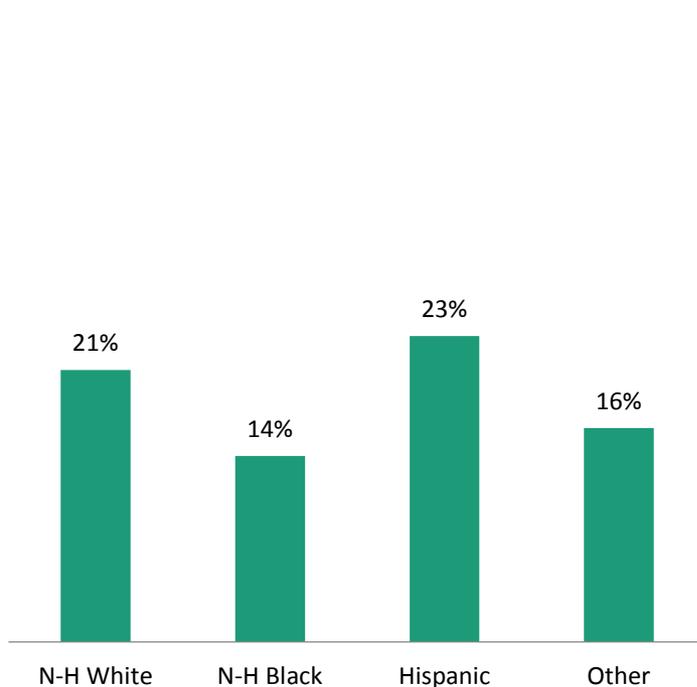


*Overall percentage= 44%

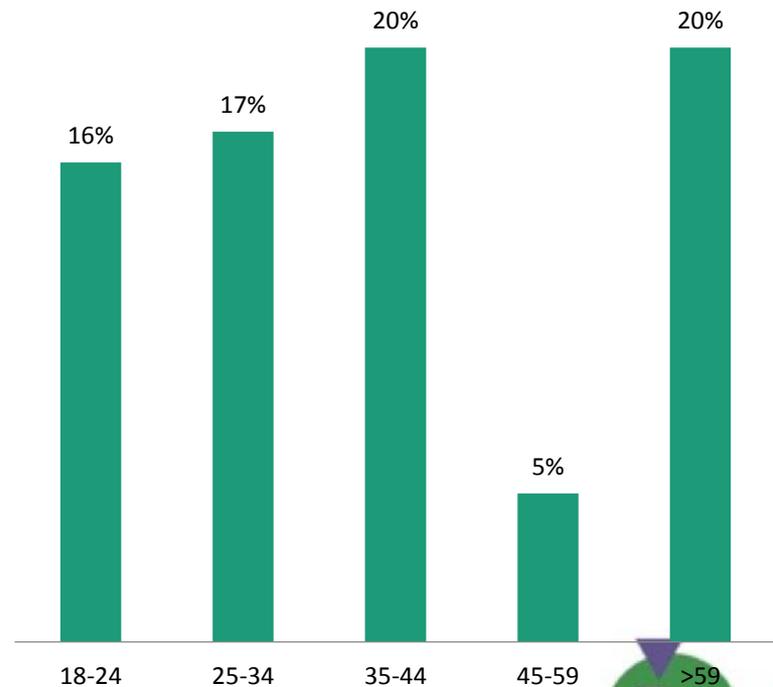


Taken PrEP in past year, self-reported HIV-negative MSM, BESURE 2017

by race/ethnicity



by age

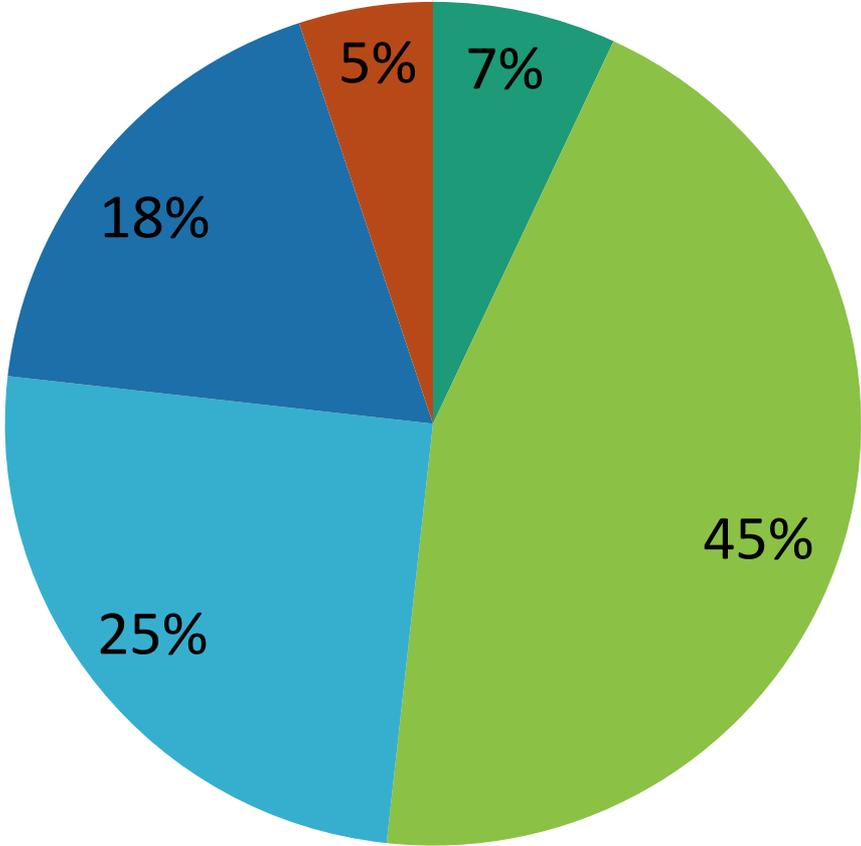


*Overall percentage= 16%



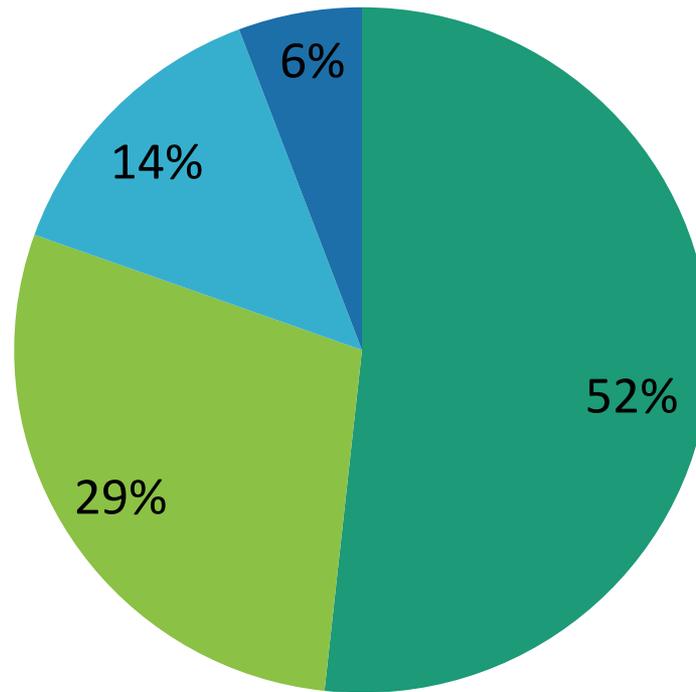
MOST PEOPLE in Baltimore are tolerant of gays and bisexuals

Strongly agree Agree Neither agree nor disagree Disagree Strongly disagree

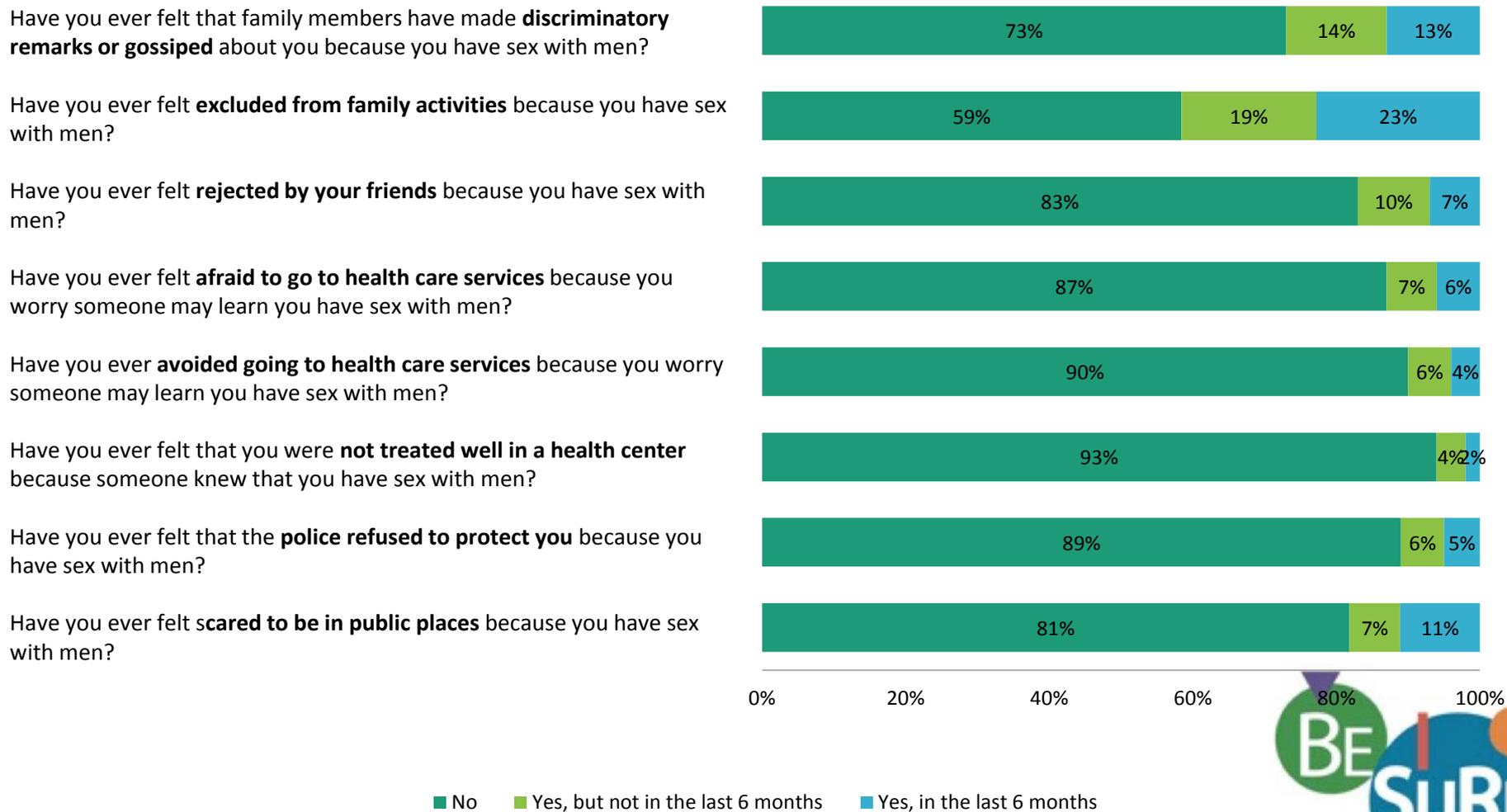


Before Grade 12, how often were you bullied, harassed, or intimidated at school or on your way to or from school because someone thought you were gay, bisexual, or had sex with other males?

■ Never ■ Sometimes ■ Often ■ Every day



Lifetime stigma & discrimination among MSM, BESURE 2017



So much more...

- German D, Brady K, Kuo I, Opoku J, Flynn C, Adams J, Patrick R, Park J, Simmons R, Smith CR, Davis W & the Mid-Atlantic CFAR Consortium. **Characteristics of African-American men who have sex with men in Baltimore, Philadelphia, and Washington, DC.** *JAIDS*.
- Kasaie P, Pennington J, Shah M, Berry SA, German D, Flynn CP, Beyrer C, & Dowdy D. **The Impact of Pre-Exposure Prophylaxis Among Men Who Have Sex With Men: An Individual-Based Model.** *JAIDS*.
- Fallon SA, Park JN, Ogbue C, Flynn C, & German D. (2016). **Awareness and acceptability of pre-exposure prophylaxis among men who have sex with men in Baltimore.** *AIDS and Behavior*.
- Raifman JRG, Flynn C, & German D. (2016). **Contact with healthcare providers not associated with PrEP awareness in Baltimore men who have sex with men.** *American Journal of Preventative Medicine*. Poteat T, German D, Flynn C. (2016).
- **The conflation of gender and sex: How public health categories shape what we know about HIV among sexual and gender minorities.** *Global Public Health*. 2016
- Said M., German, D., Flynn, C, Linton S, Blythe D, Cooley L, Balaji A, Oster A. (2015). **Uptake of testing for HIV and syphilis among men who have sex with men in Baltimore, Maryland: 2004-2011.** *AIDS and Behavior*, 19(11): 2036-2043.



Looking ahead to IDU5

Characteristics of past participants

Focus on overdose and naloxone

Next steps



Socio-demographics, BESURE PWID 2006-2015

Characteristic		IDU 1	IDU 2	IDU 3	IDU 4
Age *	18-49	88%	57%	43%	43%
	>=50	12%	43%	57%	57%
Race *	Other	45%	19%	9%	23%
	Black or African American	55%	81%	91%	77%
Sexual identity *	Other	11%	8%	13%	14%
	Heterosexual or Straight	89%	92%	87%	86%
Education *	High school or more	53%	57%	57%	62%
	Less than high school	47%	43%	43%	38%

*Statistically significant trend at $p < 0.05$ in bivariate and adjusted models



Socio-demographics, BESURE PWID 2008-2017

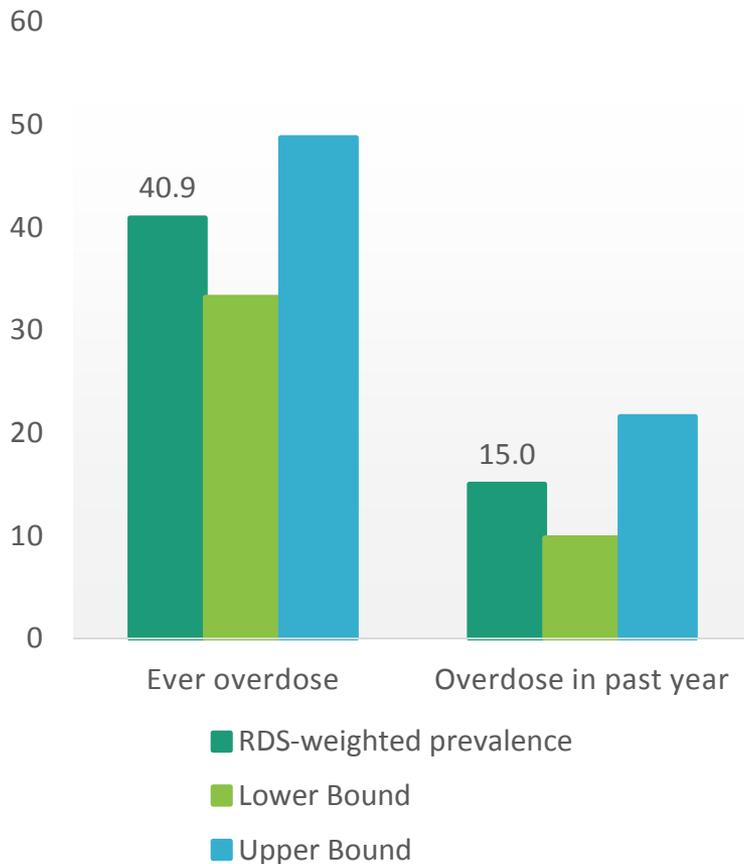
Characteristic		IDU 1	IDU 2	IDU 3	IDU 4
Homelessness *	Not homeless	42%	45%	68%	56%
	Homeless	58%	55%	32%	44%
Employment *	Other	NA	54%	59%	47%
	Unemployed	NA	46%	41%	53%
Household income *	>=10,000	29%	39%	37%	40%
	<\$10,000	71%	61%	63%	60%
Incarceration *	Not arrested	52%	56%	77%	79%
	Arrested	48%	44%	23%	21%
Health Insurance *	Has health insurance	26%	59%	85%	86%
	Does not have health insurance	74%	41%	15%	14%

*Statistically significant trend at $p < 0.05$ in bivariate and adjusted models

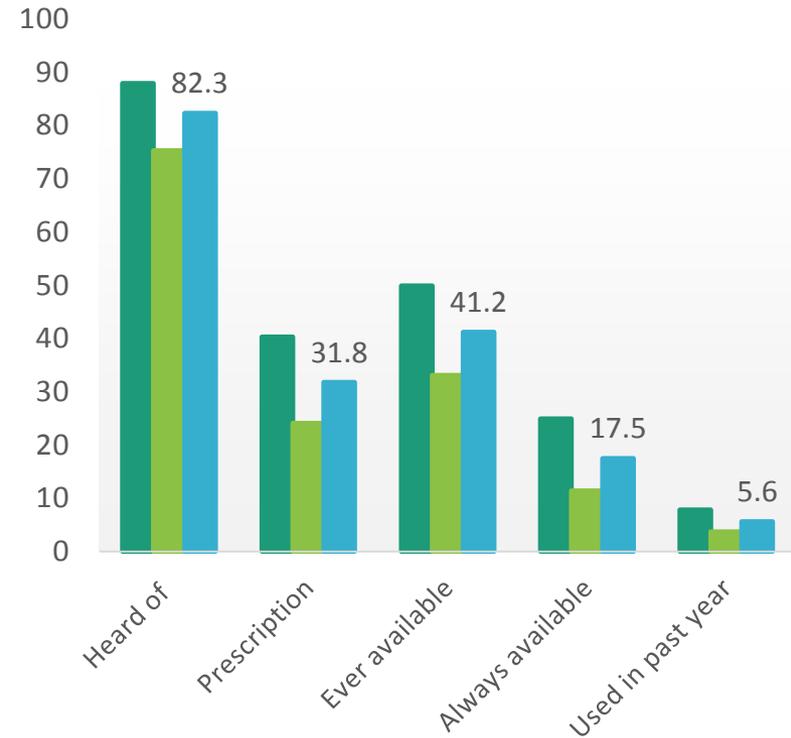


Overdose and naloxone, BESURE IDU 2015

Overdose experiences



Naloxone continuum



Overdose and naloxone prevalence by demographics and social context

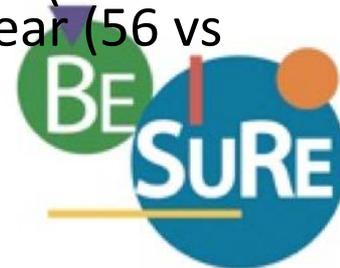
Naloxone

- Heard of: Age 18-44 (93 v 78%), pharmacy (93 vs 79%)
- Ever prescription: NH White/NH Black (32.6 v 12%), Unemployed for health (45 vs 26, 28, 18%), 10 or more years injecting (35 vs 16%), Ever have (71 v 5%), Always have (90 v 20%), Used (55 v 31%)
- Ever available: Age 18-44 (54% v 37%), Unemployed for health (57 vs 50, 35, 31%), 10 or more years (45 vs 25%)
- Used in past year: Age 18-44 (10 v 4%), Baltimore City (6 vs 0.6%), Homeless (11 v 5%), Incarcerated (11 v 5%), Fentanyl (8 vs 3%), Needle exchange (7 vs 3%), Shooting gallery (10 vs 4%)

Overdose

- Ever overdose: Inject 10 or more years (46 v 22%), use crack in past year (51 v 34%), ever naloxone available (55 v 31%), used naloxone in past year (70 v 39%)
- Overdose in past year: Age 18-34 (34 vs 31 and 9%), NH White (39 vs 8 and 27%), Homeless in past year (23 vs 10%), ever naloxone (25 vs 8%), used in past year (56 vs 13%)

* Bivariate associations significant at $p < 0.05$ when adjusted for RDS-sampling weight calculated for each outcome



Overdose and naloxone continuum by settings and contexts

		Lifetime overdose (n=254) n (weighted prevalence)	Overdose past year (n=111)	Ever heard of naloxone (n=490)	Ever naloxone prescription (n=175)	Ever naloxone available when injecting (n=260)	Ever used naloxone past year (n=64)
Syringes from needle exchange	No	91 (33.4%)	43 (14.8%)	170 (82.2%)	43 (23.1%)	69 (32.2%) **	13 (2.5%) **
	Yes	165 (44.1%)	69 (15.4%)	323 (81.8%)	133 (36.4%)	193 (45.3%)	53 (7.3%) *
Syringes from drug dealers	Yes	161 (41.5%)	75 (14.4%)	265 (80.2%)	83 (26.8%)	140 (35.3%)	38 (6.2%)
Syringes from pharmacy	Yes	67 (35.6%)	39 (20.2%)	117 (92.8%) *	30 (26.8%)	54 (41.1%)	13 (3.4%)
Shooting gallery in past 12m	Yes	121 (50.6%)	57 (16.0%)	191 (86.0%)	62 (34.8%)	106 (44.5%)	32 (9.9%) **
Injected by someone else past 12 m	Yes	105 (33.9%)	54 (14.0%)	192 (82.3%)	67 (28.7%)	113 (39.8%)	22 (4.8%)
Drugs cut with fentanyl	Yes	176 (38.5%)	81 (17.8%)	323 (87.4%)	118 (34.7%)	181 (46.6%)	49 (8.4%) **
Drugs cut with other	Yes	39 (39.9%)	26 (28.3%) **	61 (84.1%)	22 (26.9%)	29 (25.6%) **	10 (7.3%)
Drug treatment in past year	Yes	146 (34.9%)	65 (13.6%)	282 (84.4%)	100 (31.6%)	155 (41.3%)	35 (5.2%)
Incarcerated in past year	Yes	66 (38.0%)	41 (19.8%)	120 (90.4%)	47 (37.2%)	72 (54.8%)	22 (10.8%)
Homeless in past year	Yes	129 (46.5%)	68 (22.8%) **	226 (83.9%)	78 (34.0%)	128 (48.1%)	42 (11.4%) **

Looking ahead to IDU5

- February-April 2018: Formative research
- May 2018: Operational preparations, community awareness, continued community engagement
- June/July 2018: Begin survey
- December 2018 or hopefully sooner: Conclude



What have we done with our data

- Share with city & state health departments & CDC
- Share with community partners directly, at workgroup meetings, at forums
- Community presentations
- Grant proposals
- Academic publications
- Direct services
- Report of findings?



How to find our data

- MDH website
<https://phpa.health.maryland.gov/OIDEOR/CHSE/Pages/behavioral-surveillance.aspx>
- Facebook!
www.facebook.com/besurebaltimore
- BESURE website!
www.besurebaltimore.com
- Email BESURE team





BESURE Baltimore

The **B**ehavioral **S**urveillance **R**esearch (BESURE) Study is a community health project that measures prevalence of HIV, health and social issues, health-related behaviors and access to services among key groups in Baltimore. BESURE is in its 13th year and has become a primary source of information on the health of people in our community. The results of the study directly inform program planning to improve health outcomes and fight the spread of HIV in Baltimore.

The BESURE-Transgender project, *a new endeavor of the BESURE team* and supported by the Maryland Department of Health, is intended to identify the strengths and assets, and understand health, social, and service needs of transgender and gender non-conforming individuals living in and around Baltimore City. The information collected will guide health and wellness services in Maryland.

BeSure Baltimore

Facebook: <https://www.facebook.com/besurebaltimore>



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BeSure Baltimore

With sincerest thanks to:

- Study participants
- Community partners
- MDH state lab staff

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- *Anne Sawyer, Aneeka Ratnayake

- Colin Flynn, Molly Gribbin
- MDH, CDC



